

**REPORT OF THE POST-FINANCIAL CLOSE
INDEPENDENT ENVIRONMENTAL CONSULTANT (IEC)
BAKU-TBILISI-CEYHAN (BTC) PIPELINE PROJECT**

SECOND SITE VISIT, JUNE - JULY 2004

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EXECUTIVE SUMMARY

This report represents the second post-financial close field visit in Azerbaijan, Turkey and Georgia made by the Independent Environmental Consultant (IEC) between June 28th to July 10th 2004 to monitor compliance with BTC Project Environmental and Social (E&S) commitments during actual Project development. To be able to transverse a greater portion of the pipeline route than was available during the first visit because of weather restrictions and still have sufficient time to visit associated infrastructure sites, the IEC team conducted the visit as two teams. Two members of the team toured Turkey while another two visited Georgia and Azerbaijan, as well as facilities associated with the Azeri, Chirag and Deepwater Gunashli (ACG) Phase 1 Project. The observations made with respect to the ACG Phase 1 Project are presented in a separate report.

During the visit, IEC had the opportunity to meet with the three BTC in-country organizations (Azerbaijan, Turkey, Georgia), with BOTAS and with the EPC Contractors, reviewing documentation and interviewing the personnel in charge of implementing the E&S commitments and monitoring construction activities. The IEC visited several construction sites including activities along the ROW and several Above Ground Installations (AGIs).

Organization and Staffing: The different E&S and H&S management organizations of BTC, BOTAS and Contractors are in place and operational. At the level of BTC, significant improvements in staff numbers have been observed in all three countries. Significant improvements in BOTAS staff numbers were also observed in Turkey. In Georgia and Azerbaijan “*Task Forces*” have been organized where E&S, H&S and construction staff can work together to solve specific problems and the IEC considers this to be a positive development.

In Turkey, significant improvements have been made in terms of the working relationship between BOTAS and BTC. Problems still exist in Turkey in terms of Contractor staffing and the resources dedicated to their E&S and H&S activities. In particular, many of the Contractor environmental organizations lack dedicated staff and equipment to manage reinstatement activities. Lack of vehicles for Contractor E&S and H&S staff and in many cases the lack of training and inexperience of the staff are particular concerns in Turkey, where the problem is enhanced by the fragmentation and number of work fronts, which stresses the resources and capacity of the E&S and H&S organizations to manage.

E&S Documentation and Data Management: Improvements have been made across the Project in terms of tracking environmental data. In particular, chemical analyses for potable water quality and wastewater discharges are now in most cases better organized and easier to track. Although improvements are still needed, waste management is better documented. At this point in time, data management systems are generally in place and the challenge faced by the E&S teams is to interpret the data such that deficiencies in procedures or operations can be identified and rectified.

Problems still exist in terms of the quality of some of the documentation that has been prepared by the different organizations to support E&S related activities (e.g., documents attached to Management of Change Requests, development of environmental procedures, etc.). The IEC again recommends that BTC focus on this issue and work to make sure that complete E&S assessment documents are prepared according to overall commitments and international standards. For documents subject to IEC review, the audit process will be facilitated if only documents considered to be final by BTC are submitted.

Waste Management: This topic represents the greatest challenge faced by the Project in terms of ESAP compliance in Azerbaijan and Georgia and to a lesser degree in Turkey. As anticipated in the first IEC report, a significant amount of waste has been produced and the Project has not developed the necessary plans to properly manage the final disposal of various waste streams produced in Azerbaijan and Georgia. In both countries the amount of non-hazardous waste (domestic waste) generated has exceeded the capacity of the Project to dispose of this waste and non-compliant solutions are being contemplated or have already taken place. In all three countries, sewage treatment plants (STPs) have not performed well and non-compliant discharges are still occurring. The situation in each country can be summarized as follows:

Azerbaijan: The incinerator operated by CCIC at the Kurdamir Camp Central Waste Accumulation Area (CWAA) is intended to be the solution for final waste disposal for all of BTC's operations in Azerbaijan (both hazardous and non-hazardous waste). In fact, this incinerator does not function in compliance with the standards defined in the ESAP and it has not proved practical for this facility to keep up with the waste streams of both hazardous and non-hazardous waste. As a result, some amounts of waste including untested incinerator ash and domestic waste that possibly contained some hazardous waste components have been disposed of at the Balakhany uncontrolled dump site in Baku. The current situation represents a significant deviation from ESAP commitments and is classified as critical non-compliance.

A significant effort is still required to improve the condition of the STPs at camps, as required standards are still not achieved at many locations. Non-compliant wastewater discharges are sent to municipal treatment plants, which are themselves non-compliant with Project standards.

Georgia: The incinerator operated by SPJV at the CWAA for PSG-1 is intended to be the solution for final waste disposal for all hazardous and non-hazardous incinerable waste of BTC's operations in Georgia. The incinerator is not fully functional and at the end of June its production was low, only about 1-2 tons incinerated waste/week. Because of these problems, about 190 tons of incinerable waste have accumulated and the Project has tried to reduce the waste quantities by using a non-compliant third-party municipal incinerator near Rustavi. At the time of the visit, the Project was also considering using the non-compliant Iagljudja municipal dump. The current situation represents a potential critical non-compliance with ESAP commitments.

Operational difficulties for wastewater disposal occurred when the Akhaltsikhe and Tsalka Camps were starting up. As it has commonly been the case in all three countries, the STPs were not adequately sized to treat all of the wastewater streams. In Georgia, however, as reported in the first IEC report, BTC has worked with SPJV to achieve compliance by engineering improvements to the existing equipment, adding new equipment, and constructing reed beds for tertiary treatment. Compliance is close to being reached and reed beds represent a viable improvement option for the other countries as well.

Turkey: IEC observed a significant improvement in the commitment of the Project to waste management, particularly in regard to the Central Waste Accumulation Areas at Contractor camps. Waste disposal in Turkey has the advantage that a compliant disposal facility (Izaydas) is available, even though it is located far from the Project work sites. IEC recommends that third-party field inspections and audits be conducted to verify that all waste is being properly disposed at the Izaydas facility. An issue for waste management in Turkey is inert waste (excess subsoil and spoil material), which is not managed consistently, as some large waste accumulations have been observed, such as near PT3.

Wastewater treatment has also significantly improved since the last IEC mission with the addition of new treatment units, but in many locations sewage is still being transported to municipal treatment facilities because discharges are non-compliant. The Project should ensure that the municipal facilities consistently meet Project standards. There should be proper documentation in place that confirms all sewage is going to municipal WWTP's until contractor WWTP's meet project compliance standards.

An important issue associated with waste management (especially in Azerbaijan and Georgia) and wastewater treatment (all three countries) is that the Project generally assumes that an acceptable practice can be to use licensed national disposal facilities, even if they are non-compliant with Project standards. The IEC points out that adherence with national "normal practices", national standards, BP Business Unit

practices or standards, etc. does not justify non-compliant conditions with the BTC ESAP commitments.

Potable water: Bottled water is consistently used for drinking water for all camps and field sites observed in all three countries. Bottled water is sometimes used in kitchens for washing vegetables, but not at all locations. Most camps operate water treatment systems and significant improvement has been made in terms of documenting potable water quality testing. Nevertheless, in several instances test results, showing non-compliant conditions, have been obtained with uncertain follow-up. In the cases where non-compliant test results are occasionally encountered, recommendations are that bottled water be used for kitchen use and that follow-ups be made to identify the source or sources of contamination (usually coliforms or General Heterotrophic Bacteria - GHB) and fix the problem.

Most camp water supplies in Turkey are from well water, where sustainability studies have been completed. In Georgia and Azerbaijan, most camps have discontinued the use of water wells and rely on municipal sources. Where water wells are in use, such as Akhaltsikhe Camp in Georgia and Tovuz Camp in Azerbaijan, sustainability studies need to be completed.

Safety: The IEC continues to acknowledge the effort made by the BTC H&S organization to maintain the highest safety standards during Project development. During the field visits a few occupational and working safety issues were identified and discussed with site safety personnel, as discussed in greater detail in the individual country findings, but some issues are related to global work practices and community safety

The fragmentation and large number of work fronts place significant stress on the capacity of E&S and H&S personnel and resources (e.g. transportation safety, community safety, worker safety).

One of the most significant risk situations, previously identified by the IEC, is the long extent of open trench, which was found to exceed limits defined in Project commitments. The total amount of open trench in Turkey at the time of the visit was approximately 102 km, with two Lots (A and B) exceeding Project limits (20 km of open trench). Azerbaijan had about 36 km of open trench at the time of the visit, while for Georgia it was not practical to precisely assess the current condition, due to significant discrepancies between the figures provided to IEC by the EPC Contractor and BTC (about 29 km and about 14 km, respectively against the ESAP limit of total open trench in these two countries of 15 km - 10 km continuous).

IEC urges that the Project takes all the necessary steps to ensure that E&S and H&S staffs, jointly with construction management, do consistently and efficiently monitor this critical aspect, having sufficient training, experience and means to implement all the needed community safety measures, as per ESAP commitments.

Transportation safety is an issue that was exemplified by the collapse of a temporary bridge over the Kura River in Lot A in Turkey, creating a negative impact on public, private and Project traffic, which, at the time of the visit, was forced to use a long detour on a narrow and unpaved bypass, which has become one of the main links between Turkey and Georgia. Unescorted convoys of Project trucks were also observed in Lot B, although contradictory statements on the Project “official” use of convoys in Turkey were made to the IEC during staff interviews. The Project should clarify a policy on the use of transport convoys and conduct a review of transportation safety measures, policies and procedures to ensure that consistent and appropriate standards are applied throughout all three countries.

Third party access to the ROW remains an issue to the project. A general problem observed in all three countries is that the extended length of pipeline operations has interrupted farm paths such that farmers have had to travel along the ROW to work their farms, an undesirable and unsafe situation.

The use of PPE is generally good throughout the countries, although is not consistent across the Project. For example, SPJV facilities in Georgia do not require coveralls and in other cases the PPE may not be appropriate or convenient for the work being conducted (e.g. archaeologists in Azerbaijan). Efforts should be made to make sure that PPE is appropriate for the work being undertaken.

Reinstatement: Similar to observations made during the first visit, different practices and conditions were observed across the three countries. A common observation across all three countries is that top soil management, with a few exceptions, has been generally good. River crossings also appear to be well reinstated where they could be observed in the three countries. Significant differences are found, however, in terms of the amount of progress that is being achieved.

Azerbaijan: Significant progress has been made to close the gap between the front and back ends of pipeline construction following implementation of a Recovery Plan. Topsoil spreading has been completed for 152.4 km and bio-restoration initiated along the 12-meter ROW at the time of the June-July visit. Revegetation in the challenging Gobustan Desert area is showing good promise.

Georgia: Interim reinstatement has been achieved along about 42 km of the 12-meter corridor, but a significant impediment to achieving restoration is the large amount of surplus rock generated from blasting activities during the excavation of both BTC and SCP pipeline trenches.

Turkey: Only 18.5 km out of 1,083 km had been restored at the time of the visit, although the quality of reinstatement initiated was found to be good. Reasons for this poor performance are varied, but it is apparent that few resources in terms of either manpower or equipment have been assigned to reinstatement activities and there appears to be a lack of senior management

commitment to the importance of the “back-end” activities of pipeline construction. Controversy over reinstatement of the NGP line affecting is still affecting progress in Lot B in Turkey. At this point in time, IEC urges that a decision be immediately taken regarding the NGP reinstatement in accordance with ESAP commitments.

Archaeology: The overall field archaeological program along the ROW in all three countries continues to be consistent with Project commitments. Construction teams have demonstrated a willingness to work with the archaeological teams to assure the protection of cultural heritage, including giving the archaeologists reasonable schedules for excavation and working within ROW width reductions or constructing route deviations to avoid important archaeological discoveries. As noted in the first report, the responsibility for compiling, interpreting, preserving and presenting the findings will rest with the host governments. The BTC Project has a substantial investment into cultural heritage management and a commitment to manage this investment according to international standards. The Project has demonstrated important initiatives to improve the capacity of local archaeological organizations. For example, the Project in Azerbaijan has initiated a curation training program for the Azerbaijan Institute of Archaeology (AIA), which will help them manage the substantial artifact collection obtained from the Project archaeological excavations. A cautionary note is that the AIA has fielded two work crews to excavate the chance finds and BTC should consider adding an additional cultural heritage monitor to be able to adequately monitor two ongoing excavations. Improved coordination on this component between BTC and BOTAŞ was also noted in Turkey.

General Conclusions:

Significant improvements have been seen in terms of E&S and H&S staffing at the level of BTC and BOTAŞ and some success stories are being created where cooperative field efforts are being initiated with Contractor personnel, such as ROW restoration in Azerbaijan, improvements to the wastewater treatment systems in Georgia, and improvements to waste management and camp operations in Turkey. A limiting factor to further improvement has been deficiencies in the E&S and H&S staffing and resources of most of the Contractors and three important issues identified during the monitoring visit need to be highlighted.

Waste management in Azerbaijan and Georgia – because the Project incinerators have not properly functioned, the Project has disposed of waste in uncontrolled dump sites in Azerbaijan. In Georgia the Project has used an unlicensed third-party incinerator and is planning to use an uncontrolled dump site to reduce the stockpile of domestic waste. These practices are significant deviations from ESAP commitments and are classified as critical non-compliances.

Reinstatement - Only 18.5 km (less than 2%) of pipeline has been reinstated out of 1,083 km in Turkey. Controversy over reinstatement of the NGP line

affecting is still affecting progress in Lot B in Turkey. BOTAS and BTC need to initiate reinstatement of the NGP, consistent with ESAP commitments. Georgia needs to find an acceptable solution for the management of large quantities of rock along much of the ROW.

Community Safety along the ROW – the critical issue of the amount of open trench, that the IEC has raised in the past, is considered a critical non-compliance with ESAP commitments. The ESAP limits are to have no more than 20 km of open trench per Lot in Turkey and no more than a total of 15 km in Azerbaijan and Georgia. At the time of the visit the non-compliant amounts of open trench reported to IEC were as follows: Azerbaijan about 36 km, about 60 km in Lot B Turkey, about 25 km in Lot A Turkey (total in Turkey of about 100 km, including Lot C for 13.6 km), and different figures were provided by the EPC Contractor and BTC in Georgia (29 and 14 km respectively). The fragmentation and large number of work fronts on the ROW place significant stress on the capacity of E&S and H&S personnel and resources (e.g. transportation safety, community safety, worker safety). The Project should manage and carefully monitor this aspect and strictly adhere to the ESAP commitments made to ensure worker and community safety, and make available significant resources to do so.

These three issues pose significant environmental, social and health concerns to what would, otherwise, be a suitable performance by the Project in the three countries.

1 INTRODUCTION

D'Appolonia S.p.A.(D'Appolonia), located in Genoa, Italy, has been appointed as the post-financial close Independent Environmental Consultant (IEC)¹ to the Lender Groups for the Baku-Tbilisi-Ceyhan (BTC) Pipeline Project (BTC Project)² and the Azeri, Chirag and deepwater Gunashli (ACG) Phase I Project (Phase 1 Project)³. The BTC Project is currently under development and will be owned by BTC, a company formed by a consortium of the Main Export Pipeline Participants (MEPs)⁴. Construction of the BTC Project is underway in Azerbaijan, Georgia and Turkey. The Phase 1 Contract Area covers the Azeri, Chirag and Deepwater Gunashli fields and is being developed by Participating Production Sharing Agreement (PSA) Contracting Parties.⁵

The overall role of D'Appolonia within the BTC and ACG Projects is to assess and report to the Lender Group on the compliance with the environmental and social provisions contained within the respective project Environmental and Social Action Plans (ESAPs), the associated Contractor Control Plans (CCPs), and BTC/ACG Management Plans and with HSE management systems. This report summarizes the results of D'Appolonia's second field visit held between the 28th of June and 10th of

¹ IEC Team members: Roberto Carpaneto (Team Leader), Paolo Lombardo (Team Coordinator), Miles Scott-Brown (Team Member) and William J. Johnson (Team Member).

² The Lender Group for the BTC Project (BTC Finance Parties) comprises the International Finance Corporation ("IFC"), the European Bank for Reconstruction and Development ("EBRD"), Compagnie Française d'Assurance pour le Commerce Extérieur ("COFACE"), Her Majesty's Secretary of State acting by the Export Credits Guarantee Department ("ECGD"), Euler Hermes Kreditversicherungs-AG ("Hermes"), Japan Bank for International Cooperation ("JBIC"), Nippon Export and Investment Insurance ("NEXI"), Overseas Private Investment Corporation ("OPIC"), Servizi Assicurativi del Commercio Estero ("SACE"), the Export-Import Bank of the United States ("US EXIM") and any other export credit agencies and commercial lenders and any other providers of debt financing or political risk insurance for the BTC Project, in their capacity as the providers of debt financing or political risk insurance for the BTC Project, including, for the avoidance of doubt, the Sponsor Senior Lenders.

³ The Lender Group for the Phase 1 Project (Phase 1 Finance Parties) means IFC and EBRD.

⁴ Also termed the "BTC Sponsors" includes Amerada Hess Corporation, BP International Limited, BP Corporation North America, Inc. ConocoPhillips, ENI International, B.V., INPEX Corporation, ITOCHU Corporation, SOCAR, Statoil ASA, TOTAL, S.A., Türkiye Petrolleri A.O. and Union Oil Company of California.

⁵ The parties to the PSA at the date of the CTA, also termed the "PSA Parties" includes Amoco Caspian Sea Petroleum Limited, Amerada Hess (ACG) Limited, BP Exploration (Caspian Sea) Limited ("BP Exploration"), Devon Energy Caspian Corporation, Exxon Azerbaijan Limited, INPEX South West Caspian Sea, Limited, ITOCHU Oil Exploration ("Azerbaijan") Inc., Statoil Aspheron a.s., Türkiye Petrolleri A.O. ("TPAO") and Unocal Khazar, Ltd.

July 2004 for the BTC Project. During this period, a visit was also made to the ACG Phase 1 Project. A report for the ACG Project has been prepared under separate cover.

The primary objective of D'Appolonia's with respect to the BTC Project was to verify the implementation of BTC Project commitments established in the Environmental & Social Action Plan (ESAP), final at the time of financial closure (February 2004), and supporting documents developed to assure implementation of the ESAP including Contractor Implementation Plans and Procedures (CIPPs) and associated Method Statements and Procedures. D'Appolonia's review has included the environmental and social (E&S) and health and safety (H&S) management activities of BTC, the Turkish State Petroleum Pipeline Corporation (BOTAS) in the case of Turkey, and the individual Engineering, Procurement and Construction (EPC) Contractors. Emphasis has been placed on evaluating compliance primarily on the reactions of the BTC/BOTAS and the individual Contractors to non-compliant situations based on the following:

- Random checking of individual non-compliances identified by BTC/BOTAS or individual Contractors and reviewing the mechanisms followed by the responsible organizations to identify, address, correct and follow up non-compliant situations, as well as the documentation demonstrating the implementation of appropriate procedures.
- In-depth review of symptomatic non-compliances, which may indicate a deficiency in the process of compliance management and identifying mechanisms and the procedures the BTC Project proposes to follow to make sure that similar situations will not occur again.
- Follow-up to non-compliant conditions identified during the February – March 2004 mission, as practical. It should be noted that not all of the locations where non-compliant situations were originally encountered could be visited during this second mission, so it is not always practical to close the issues previously identified, even if the Project has performed the required actions.

Most of the findings identified in this report have been based on field observations, and interactions with the individuals actually responsible for the field implementation of the ESAP.

To be able to transverse a greater portion of the pipeline route than was available during the first visit because of weather restrictions and still have sufficient time to visit associated infrastructure sites, the IEC team conducted the visit as two teams. Two members of the team toured Turkey while another two visited Georgia and Azerbaijan, as well as facilities associated with the ACG Phase 1 Project.

Subsequent sections of this report provide the following:

- Section 2 presents the review of the Project in Azerbaijan
- Section 3 presents the review of the Project in Georgia
- Section 4 presents the review of the Project in Turkey
- Appendix A presents the trip itinerary
- Appendix B presents lists of non-compliances with the ESAP, with relevant observations and recommendations for Azerbaijan, Georgia and Turkey, respectively.

2 AZERBAIJAN

The BTC Project in Azerbaijan includes the first Pump Station (PSA1) at Sangachal Terminal near Baku and 443 km of pipeline extending from the PSA1 to the border with Georgia. The corridor followed by the pipeline is close to the existing Western Route Export Pipeline (WREP) and is also the corridor that will be subsequently followed by the South Caucasus Pipeline (SCP), which will transport gas from the Shah Deniz field to the Georgian/Turkish border in a separate, related project. The BTC Project in Azerbaijan includes several permanent Above Ground Installations (AGIs) including the first Pump Station at the Sangachal Terminal (PSA1), an Intermediate Pigging station (IPA1) near KP 125, and a second Pump Station (PSA2) near KP 245, as well as necessary block and check valves. The visit to PSA1 at the Sangachal Terminal is presented in the trip report for the ACG Phase 1 Project.

The BTC Project in Azerbaijan uses two prime Contractors, Consolidated Contractors International Company (CCIC) responsible for pipeline construction and Spie-Capag Petrofac Joint Venture (SPJV), responsible for the AGIs.

In addition to the permanent facilities, the pipeline is associated with several temporary facilities, which include:

- Construction camps (for CCIC: Mugan near KP 20, discontinued; Kurdamir near KP 130, occupied; Yevlakh near KP 240, occupied; Tovuz near KP 380, occupied. For SPJV: Kurdamir for IPA1 near KP 126; PSA2 camp near KP 244)
- Dump Yards for pipe (Umbaki near KP 0; Mugan near KP 65; Kurdamir near KP 129; Yevlakh near KP 235; Gandja on the north east edge of the town of Ganja; Agstafa next to the town of Agstafa near KP 400; Beyuk Kassik next to the Georgia border near KP 440).

Except for a short distance of the ROW that was visited at the time of the visit to the ACG Phase 1 facilities from the Sangachal Terminal (KP 0 km) to the Mud Volcano Ridge at about KP 25 km, the visit to Azerbaijan was conducted between KP 195 to KP 410, where most of the Project activities were taking place. During the course of the visit, representatives of BTC and CCIC were interviewed. SPJV facilities were not visited during this trip.

2.1 CONSTRUCTION STATUS

Current (June - July 2004) construction progress is as follows:

- *Facilities* – Pump Station PSA1 at Sangachal Terminal is reported to be approximately 75% complete in terms of the main civil works; the construction status of PSA2 and the Intermediate Pigging station IPA1 was not reported to the IEC during this visit.
- *Pipeline* – ROW clearing and grading to KP 409 (stopped at that point because of the discovery of some unexploded ordinance); pipe stringing, 399 km; trenching, 242 km; pipe in ground, 231 km; backfilled, 207 km; Phase 2 reinstatement, 152 km; Phase 3 bio-restoration, 92.3 km (numbers reported for July 3, 2004). Hydrotesting has been completed in the segment from Sangachal to KP 47.

At the time of the D'Appolonia visit, all but five major river crossings had been complete, Kurudera (KP 422.2 not started), Kura West (KP 411.1 started, but being reappraised in terms of installation technique), and three being completed - Hassan Su (KP 397.7) that needs an extension to its permitted construction window originally defined because of ecology, Tovus Chai (KP 377.1) and Asrin Chai (KP 376). As of June 26, 2004 the Project reported that of 1,422 major and minor water crossings (including small irrigation channels), 755 had been completed with 667 to go. The completed crossings of the Djeyrankechmez River (KP 9.0), Kor Chai (KP 291.9), Ganja Chai (KP 295.8) and Kushkar Chai (KP 316.5) were visited during this mission to review reinstatement.

2.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

2.2.1 Resources and Organization - Observations

The following discussion summarizes information obtained regarding the environmental management organizations of BTC and CCIC. The social management organizations are outlined in Section 2.9. The comments are limited to BTC and CCIC, as SPJV was not visited. A positive difference between what was observed in February – March versus July 2004 is that the BTC and CCIC environmental and social staffs effectively operate as a single team.

BTC

BTC has added new senior staff and reorganized their field management. Responsibilities have been assigned on the basis of KP distances, such that one team manages KP 0 – 300 and another for KP 300 to the Georgian border. This system has facilitated field operations and prevented problems observed during the first visit where the monitors had difficulty keeping up with fragmented work sites extending a

long distance along the ROW. The improvements to BTC staffing and organization recommended during the first IEC mission have been implemented and overall staffing appears to be complete.

BTC Management has started a satellite office in Ganja such that senior BTC management can have an improved field presence. The office is occupied by senior BTC management from Baku headquarters on a rotating basis and this system improved the field presence of management from what could be achieved from Baku.

CCIC

CCIC staffing has improved with the addition of four Environmental Field Officers (EFOs), but the recommendation to add senior staff has not been followed and this has been an issue with BTC management. The technical resources (vehicles, digital cameras, GPS, personal computers) made available to the CCIC environmental staff still appears to be limited when compared with the current number of staff. CCIC has reorganized following BTC's organizational structure and to a certain degree their weaknesses in terms of staffing and resources are being covered by a closer working relationship with BTC, such that the field teams are now basically working as one team.

A new concept being implemented by CCIC in cooperation with BTC is the concept of Task Forces. Task Forces comprised of E&S staff together with individuals responsible for various aspect of construction work together to audit critical environmental aspects related to construction. The concept was just being started at the time of this mission, so results from this process have yet to be achieved.

2.2.2 Resources and Organization - Recommendations

BTC

1. Although it is recognized that significant efforts have been made to make improvements, the level of effort to control the procedures being followed by the Contractors continues not to be sufficient, particularly for waste and wastewater management (see Sections 2.3 and 2.4). The results of the specific Contractor audits recommended in the first IEC visit clearly define the problems that should be better controlled. As noted above, the staffing for BTC appears to be complete and the recommendation is therefore that the existing staff work more closely with the Contractors to solve the known problems and bring in specialized expertise where required.

CCIC

2. CCIC should continue the process to strengthen its E&S organization both in terms of personnel (a second Environmental Officer and a reinstatement specialist position should be filled as soon as practical), technical resources

(vehicles and field equipment), and experience (senior staff is recommended with significant experience in environmental management of large pipeline construction projects, including camp and supporting infrastructure, to internationally accepted standards).

2.2.3 Management of Changes (MOC) - Observations

The supporting documentation and correspondence among the involved parties dealing with some E&S related changes during Project development was reviewed during the mission. The most significant Management of Change process has been associated with construction through the Hassan Su River during a seasonal constraint to complete the crossing and hydrotest section on schedule. CCIC proposed to enter the river about one month before the constraint is lifted and presented justification for this action based on reducing environmental impact by adopting a flumed river/dry open cut method. An additional impact associated with the crossing was the requirement to permanently store excess material from river approach excavation works within existing ravines. The EIA final draft was completed and approved by BTC and the Ministry of the Environment in April 2004. The EIA and Method Statement for the proposed Change Management provide adequate documentation that the principles of the ESAP will be followed.

Construction activity is currently being done along the pipeline ROW by CCIC without the finalization of a Change Management process that defines procedures to simultaneously work on the SCP ROW. The MOC process was initiated, but it was not completed at the time of the visit. At the time of the visit, plans were being made such that the full 44 meters of combined BTC/SCP Projects would be stripped along a long section of the ROW in anticipation of the construction of the SCP. The Project also has a commitment to complete reinstatement of the entire ROW in places where the SCP follows the BTC pipeline construction by more than a year. The lack of a Change Management process with associated documentation to justify non-compliant activities associated with the 44-meter reinstatement was noted in the first IEC mission, but at this point in time the lack of this documentation must be considered as a direct non-compliance. The supporting documentation has been reported to be under preparation and should be ready by October 2004, according to information provided by the Project team (*Level I Non-Compliance, CCP Reinstatement Plan, Commitments ID: 375, 492, 498, 499, 500, 567, 574, 659, 1211, 1212, 1221, 1244*).

2.2.4 Management of Changes – Recommendations

3. The supporting documents to any request of change should be developed according to Project requirements and standards and be considered satisfactory and technically sound prior to implementation.

4. A Change Management process should be followed and completed for the activities of ROW construction affected by the SCP. It is also noted that the Project also has the commitment to complete reinstatement of the entire ROW in places where the SCP follows the BTC pipeline construction by more than a year. This commitment should be properly considered in developing the MOC documentation, as needed.

2.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, and irrigation systems. In addition, the review of this topic includes camp water supplies and general aspects of camp management.

2.3.1 BTC - Observations

Third party sources of supplies, in particular aggregate and cement/concrete are still not being consistently evaluated in terms of their compliance with ESAP requirements in the cases where the Project represents a significant percentage of their production. It is understood that BTC is considering a process to evaluate whether a specific facility should be considered under the “umbrella” of the ESAP. A possible approach could be based on Project usage, such that, for example, if 80% of a third-party source of aggregate, concrete or other major supply is dedicated to the Project, that Project standards should be followed. If the source is less than 20% dedicated to the Project, it can be excluded. If it is between these percentages, the operations should be audited for major issues (e.g., sand and gravel should not be obtained from dredging in an active river channel), but national standards can generally be followed. It is understood that the Project is in the process of evaluating this type of process.

2.3.2 CCIC - Observations

As noted above, CCIC has four work camps located along the pipeline route, Mugan (KP 20 - being discontinued), Kurdamir (KP 130), Yevlakh (KP 240), and Tovuz (KP 380). At the time of the visit, Kurdamir Camp was occupied by approximately 160 workers, while the camps in Yevlakh and Tovuz were occupied by about 630 and 330 workers, respectively. During this mission the camps at Kurdamir, Yevlakh and Tovuz were visited with the following observations:

- *Water supplies:* Only the Tovuz Camp currently uses water from a well. A sustainability study for this well has not been completed, as the camp received this water supply from the landowner, who did not provide any documentation of well testing. The Project has yet to complete well testing, which is especially recommended because this camp has nearby residents that could be using ground

water (*Level I Non-Compliance, CCP Infrastructure and Services, Commitment ID: 276, 278, 280, 833*). The water well at the Yevlakh Camp has been discontinued and the previously identified non-compliance for the lack of a sustainability study for this well can be considered to be no longer relevant. The other camps use municipal sources. Test results for potable water indicate that problems continue to be encountered, but the frequency of testing is still only monthly. The IEC was provided only a single test for the Tovuz water supply that was conducted for microbial samples. Although from this test the water appears to be of acceptable quality, a full suite of tests should have been conducted to establish the acceptability of this water in terms of WHO standards (*Level II Non-Compliance, CCP Infrastructure and Services, Commitment ID: 528, 628*). This is a repeat of the Level II non-compliance issued for the February–March visit. Recent microbiological testing of Kurdamir and Yevlakh potable water supplies (May 2004) shows non-compliant concentrations for General Heterotrophic Bacteria (GHB). Potable water testing for April and May taken from taps and dispensers (locations not clearly specified in the test results provided – presumed to be in Yevlakh or Kurdamir) indicate non compliant conditions for about 27% of the more than 130 tests, with GHB being the most commonly exceeded parameter, but coliforms, and a few chemical parameters also occasionally found in non-compliant concentrations. Drinking water in the camps and in the field is being provided as bottled water. Drinking water, as defined by WHO, is water that is “suitable for human consumption and for all usual domestic purposes including personal hygiene.” Although the use of bottled water for drinking solves much of the concern for use of potable water, assurance needs to be provided that the water used for kitchen and personal hygiene throughout the camps meets WHO guidelines and this is not being achieved (*Level II Non-Compliance, CCP Infrastructure and Services, Commitment ID: 528*).

- *Irrigation channels*: Irrigation channels along the pipeline ROW have posed special challenges to construction as hundreds have been crossed where it has been necessary to maintain flow for the local farmers. Based on field observations and complaints registered on the Grievance Log, CCIC appears to continue to be properly managing irrigation channel crossings, generally within BTC Project commitments.
- *Road Crossings*: Road crossings along the pipeline ROW appear to continue to be managed within BTC Project commitments.

- *Access roads to the ROW:* During the first visit, CCIC was not able to demonstrate that pre-construction surveys had been consistently conducted for new access roads or where there was a significant upgrading to an existing road. IEC was informed that a comprehensive Environmental Pre-Construction Survey will be provided by CCIC to BTC for review in July. *The Level I non-compliance identified in the first mission for this issue is therefore considered pending.*
- *General Camp Management:* The housekeeping problems encountered at the Kurdamir Camp during the first visit were not found to have been significantly improved. General housekeeping at the Yevlakh and Tovuz Camps was found to be substantially better than Kurdamir. Some specific problems to be resolved in the area of pollution prevention and waste management for all of the camps are identified in Sections 2.4 and 2.5.

2.3.3 Recommendations

1. The first recommendation from the first mission is still valid: During the construction phase, some of the most significant situations with the potential for adverse Project environmental impact are from temporary facilities (camps, storage yards and related facilities). All E&S organizations (BTC and Contractors) need to be better focused on the management of these facilities within Project commitments.
2. BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete.
3. Potable water testing continues to be insufficient and baseline testing is missing for the Tovuz Camp. The water well at Tovuz Camp requires a technically sound sustainability study taking into account both environmental and social considerations. BTC has the responsibility to ensure that potable water is correctly obtained from sustainable sources, baseline testing is conducted for all sources and standardized procedures are established to monitor the sources.
4. The Project has compensated for potable water quality problems by supplying bottled water for drinking, but this is not sufficient when camp water is used for personal and kitchen hygiene purposes. When non-compliant test results are obtained from treated camp water, the Project should immediately determine the cause of the problem and take corrective actions, and not wait another month to see if the next round of tests yields compliant results.
5. Complete the preparation of stand-alone pre-construction baseline survey documents for new project footprints, in particular access roads.

6. For CCIC, as previously noted, improve housekeeping, especially at Kurdamir Camp, also considering that this camp will also be used for the SCP Project and is therefore expected to be operational for a longer period.

2.4 WASTE MANAGEMENT

2.4.1 Non-Hazardous and Hazardous Waste – Observations

CCIC has contracted AMSCO for waste management. Both hazardous and non-hazardous wastes from the entire Project in Azerbaijan are collected by AMSCO and brought to a waste transfer station at Kurdamir Camp, the Central Waste Accumulation Area (CWAA). At the time of the February/March 2004 IEC visit it was understood that non-hazardous domestic waste, oily waste and oily rags collected from CCIC and SPJV construction and camp sites would be incinerated with a hazardous waste incinerator at the Kurdamir Camp, also being managed by AMSCO. It was understood that AMSCO also transported recyclable and some hazardous waste that could not be incinerated to their own waste management facility (Temirmash Waste Storage Area) located in Baku. Non-incinerable hazardous waste is currently stored at the CWAA or at the Temirmash facility until a treatment/disposal site compliant with EU regulations is constructed and made available to the Project in Azerbaijan. Incinerable hazardous waste is stored at the CWAA until it can be incinerated with the Kurdamir Camp incinerator, as per plan. The results of recent (June 2004) audits, conducted on waste management by an independent consultant on behalf of BTC, regarding the status of the hazardous waste incinerator identified some significant discrepancies with the planned waste management program.

Based on the results of these recent audits, as well as from observations and interviews at the CCIC camps, the following has been identified:

- The Kurdamir incinerator continues to have significant problems, although it is noted that BTC is undertaking significant effort to improve the functioning of the incinerator and has hired incineration experts to monitor emissions, improve the operation of the incinerator and provide operational procedures and training of staff. The findings of the recent audit are that the incinerator is suitable for Project needs, but it is not properly managed. Ash and scrubber liquor are not properly managed, emissions are effectively unknown, and incineration has been very limited. During the field visit the IEC still observed examples of incomplete combustion, i.e. the remains of plastic bottles were clearly visible in the ash taken from the incinerator. This was observed during the first visit and continues to be observed. The non-compliances identified during the February/March 2004 visit are still valid, including those related to emissions, operation and containment (*Level II Non-Compliance for emissions, CCP Waste Management Plan, Commitment ID: 244, 245, 246, 1051, 1110*)

and *Level I Non-Compliance for operations, CCP Waste Management Plan, Commitment ID: 970, 1110*).

- During the February/March 2004 visit, it was noted that improvements were needed in terms of segregating and containing the different waste streams at the different camps. Some improvements are still needed, as further discussed in Section 2.5 pertaining to pollution prevention. As also noted during the February – March mission, the available figures for waste generation (waste inventory) were not adequate, as they did not allow for the easy tracking of the origin, storage and fate of individual waste streams. In actuality, not all waste handled by AMSCO can be tracked. The BTC audit provides several examples that could not be tracked through the system. More significantly, close to 300 m³ of hazardous waste scrubber liquid could not be tracked (*Level II Non-Compliance, CCP Waste Management Plan, Commitment ID: 395, 396, 397, 398*).
- The final disposal solution for waste has not always been appropriate. The incinerator has not been able to keep up with the amount of waste being generated. The BTC audit uncovered that waste, as discussed below, was being sent to a municipal dump site near Baku, the Balakhany disposal site. A report prepared by an independent consultant for the BP Group Azerbaijan Business Unit (AZBU) in June 2004 summarizes the nature of the Balakhany municipal dump site defining the site as currently unacceptable, likely to continue to be unacceptable and showing a sub-standard operation. The audit report by BTC indicates that close to a month's production of untested incinerator ash and about two month's generation of "domestic" waste for all of BTC's operations in Azerbaijan have been sent to the Balakhany dump site. It should be noted that the IEC observed on numerous occasions that small amounts of hazardous wastes, such as oil filters and oily rags, were mixed with non-hazardous waste. As a result of their internal audit, BTC has assigned a Level I non-compliance to this disposal, citing the reason for the non-compliance to be the health risk caused by backlog of putrescible waste and that the disposal took place when the incinerator was not operational.

The IEC understands that the BP Azerbaijan Business Unit (AZBU) allows for the disposal of non-hazardous waste at Baku municipal dump sites, if they are licensed by the Azerbaijan Ministry of the Environment. The IEC points out that adherence with national "*normal practices*", national standards, BU practices or standards, etc. does not justify non-compliant conditions with the BTC Project commitments. The ESAP is very clear in this respect: the first basic commitment in the Waste Management Plan is that "... *Ultimate responsibility for correct waste disposal lies firmly with BTC Co and in this role it will ensure that: Project contractor(s) have adequate training and follow stipulated waste management procedures for minimising, handling and storing waste; waste disposal contractor(s) use facilities for treatment and disposal of waste that meet acceptable standards; and audits are*

carried out to ensure these are achieved". The very first sentence in the Waste Management Plan describing the use of a landfill states: "*...If the landfill option is used in Azerbaijan, the facility will be located and designed in accordance with EC Directive 1999/31/EEC*".

The current situation therefore represents a critical non-compliance, including a reasonable expectation of impending environmental material damage, due to the lack of a viable and planned alternative after more than one year of Project construction, and a serious breach of several Project commitments (*Level III Non-Compliance, CCP Waste Management Plan, Commitment ID: 391, 428, 533, 1108, 1110*). It is also assigned a Level III because it is an intentional disregard of the prohibition, as stated in the ESAP, to dispose of waste in an uncontrolled dump, as the Balakhany disposal site is to be classified according to relevant and applicable Project regulations, and where uncontrolled burning was observed (CCP Waste Management Plan, Commitments ID: 380, quote "*There will be a prohibition on uncontrolled burning or burial of waste*" unquote; 391, quote "*The following are the objectives of the Waste Management Plan: ... To prohibit of uncontrolled burning or burial waste*" unquote; 808, quote "*Implementation of Waste Management Strategy and the development of a project Waste Management Plan to include: ... Prohibition of uncontrolled burning or burial of waste*" unquote).

2.4.2 Non-Hazardous and Hazardous Waste - Recommendations

BTC

1. BTC is responsible for full compliance of its Contractors with the ESAP commitments. BTC should review its practice to adhere to national practices or BP AZBU policies and procedure and strictly be compliant with Project commitment as stated in the ESAP and in any other relevant documents. BTC therefore needs to work with CCIC to develop compliant options for final disposal of the different waste streams and to enforce waste management rules. The recommendation for ensuring proper operation of the Kurdamir incinerator provided in the first report is still valid. Emphasize the need for "*cradle to grave*" waste management.
2. BTC should start immediately a process for the identification of waste management alternatives including:
 - a. the realization of a new dedicated controlled (compliant with Project commitments) landfill;
 - b. the installation of a new, more efficient incinerator if sufficient performances cannot be achieved with the current arrangement;

- c. interim solution, including storage of the domestic waste according to applicable EU standards (including packaging and storage on lined platforms) waiting for final acceptable disposal options.
3. BTC should immediately assess the direct/indirect environmental and social impacts of the use of the Balakhany municipal dump site for the disposal of domestic and hazardous waste, and eventually develop remedial measures that should be implemented to mitigate the potential impact generated by the Project.

CCIC

4. The same recommendations provided in the first report are still valid, as no significant improvements have been observed, and are repeated for reference.
 - a. Although some training was reportedly given by a specialized consultant, additional training of incinerator operators is needed, such that they can demonstrate that the incinerator is operating in compliance with Project commitments.
 - b. Hazardous waste containers should be stored in bunded areas with appropriate secondary containment. Minimization of their potential contact with stormwater (e.g., using roofs or overpack drums) should be implemented, particularly taking into account that they will have to be stored on site until a suitable disposal option is identified by BTC (see also recommendations related to pollution prevention).
 - c. Waste container labeling needs to be reviewed, improved and made compliant with Project specifications to make sure that waste can be tracked. As a minimum, the container labels should include: details of producer and contact details; what the waste is (description, hazardous components); how much there is (weight, volume, concentration); type of containment, and the number and size of containers; and the time and date of transfer to the CWAA. Further training on waste handling, storage and labeling is also needed to improve performance.
 - d. The waste inventory needs to be revised and improved to allow proper tracking of waste amounts generated, recycled and disposed of by CCIC through AMSCO and other approved options.

In addition, CCIC should make sure that waste managed by AMSCO can be properly tracked.

2.4.3 Wastewater Management - Observations

BTC

The situation with respect to wastewater treatment has not measurably changed since the February – March IEC mission. Wastewater treatment is still inadequate at most facilities visited and contingency plans have therefore been implemented to manage the poor performance of the Sewage Treatment Plants (STPs) installed by both EPC Contractors. BTC carried out an audit in June and subsequently prepared an “Instruction to Fix” letter to CCIC spelling out the requirements for improving STP operations.

CCIC

CCIC reported that their Sewage Treatment Plants (STPs) at Kurdemir and Yevlakh camps discharge into the municipal sewers. The fate of effluent at the Tovuz Camp could not be defined to the IEC by the local CCIC representatives. CCIC representatives did not know the operating capabilities of the municipal treatment plants, but assumed that they would not comply with Project standards. IEC was also informed that oily water and other liquid wastes are collected by AMSCO and trucked to municipal disposal facilities and, as noted above, 300 m³ of hazardous waste scrubber liquid cannot be accounted for. Problems with tracking the disposal of wastewater were assigned as a Level I non-compliance during the previous IEC visit. The problem has not disappeared, but appears to have worsened. As noted for solid waste disposal, adherence with national “normal practices”, national standards, AZBU practices or standards, etc. does not justify non-compliant conditions with the BTC Project requirements. The current use of municipal facilities that are not operating at required standards represents a non-compliant condition and is not acceptable practice (*Level II Non-Compliance, CCP Waste Management Plan, Commitment ID: 553*).

As noted in the previous IEC visit, CCIC does not operate a field laboratory or have testing equipment available to effectively monitor wastewater effluent quality and STP efficiency on site. Samples reported to IEC continue to be collected monthly and sent to an offsite laboratory in Baku for testing. This arrangement does not allow for a frequent and effective wastewater monitoring. In response to the need for more regular sampling and the timely availability of laboratory results, BTC has procured two sets of microbiology and photo-spectrometer equipment, to complement CCIC’s existing in-house monitoring capabilities. This equipment has not yet been set up, but is expected to be installed in the near future.

2.4.4 Wastewater Management – Recommendations

BTC

7. BTC should continue the leadership role it has assumed since the February – March mission in terms of helping the Contractors to continue to work towards achieving compliant wastewater discharges and to maintain control of the procedures being followed by the Contractors for the monitoring of effluents.
8. Audit the disposal practices of AMSCO. Identify final disposal solutions being implemented for wastewater trucked off-site.
9. Complete the actions arising from the internal BTC audit and determine, if practical, the fate of 300 m³ of hazardous waste scrubber liquid and verify that the ongoing disposal practices for this liquid are appropriate. This wastewater stream is usually pre-treated through a neutralization unit to precipitate the heavy metals before it can be conventionally disposed as a non-hazardous liquid.

CCIC

10. The STPs should be improved to allow effluent disinfection and control coliform concentrations in the discharge. Proper management of influent water, with respect to its characteristics and loads should be carefully evaluated prior to implementing any action.
11. Operate as soon as practical the field laboratory capable of effectively monitoring basic wastewater quality parameters.
12. Consider the use of reed beds as a cost-effective means to achieve effluent compliance through tertiary treatment. BTC/SPJV efforts in Georgia could provide a model for this.

2.5 POLLUTION PREVENTION

2.5.1 Observations

The Project has adopted a pollution prevention plan aimed at systematically identifying potential impacts from construction activities and implementing avoidance and mitigation measures to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. The mitigation measures include: spill prevention and management; management of existing contaminated areas, if any found during construction; groundwater protection; surface water protection; ecological receptor protection; air quality protection and dust mitigation; noise control; soil erosion control and topsoil protection.

Various provisions apply directly to the protection of surface and ground waters, including: permanent fuel and chemical storage, hazardous material storage, vehicle maintenance facilities, wastewater discharges, controlling run-off, and disposal of trench water and groundwater.

Pollution prevention along the ROW consists primarily of erosion and sediment control measures and general good housekeeping and waste management. This subject is reviewed in Section 2.6. As blasting is not a part of pipeline construction in Azerbaijan, vibration monitoring is not of particular concern.

BTC has taken the lead in evaluating specific problems associated with pollution prevention, especially with respect to air emissions. In particular, efforts in this area have concentrated on evaluating emissions from the Kurdamir incinerator. The evaluation provided by an independent consultant for BTC indicates that it is unlikely that emissions from this facility present a health risk, but compliance with EU standards cannot be verified. The equipment used to provide continuous monitoring is not reliable and the Project is still looking towards alternative solutions to demonstrate the performance of the incinerator in terms of emissions.

BTC has developed a Hydrogeological Monitoring Program to comply with the relevant commitments (identify groundwater abstraction points in close proximity to the pipeline and develop a hydrogeological program for the Karayazi aquifer along the ROW). BTC reported that installation of monitoring wells for the Karayazi aquifer monitoring has been completed. Although monitoring is reported to have been ongoing to collect reliable baseline data prior to line fill, the status of this effort was not specifically addressed during this trip and will be reviewed in detail during the next IEC field trip.

CCIC

Maintenance of irrigation drainage and stream flow and erosion and sediment controls throughout the ROW construction are discussed in Section 2.6.

A comment from the last mission was that at the time of the visit the environmental monitoring procedure available at camps was still in a draft version. CCIC field environmental staff was not aware of the status of the procedure and a Level I non-compliance was assigned. Over the past three months, the BTC and CCIC teams have worked together under the umbrella of BTC procedures, and such uncertainties regarding the requirements of the monitoring program can be considered to have been eliminated. The IEC considers the non-compliance to be closed and commends BTC for implementing practice as an on-the-job exercise.

As previously noted during the previous IEC mission, work was needed to improve the fueling stations at Kurdamir and Yevlakh camps. Waste management areas also had problems with drainage and spill containment. It was noted that chemical and

fuel storage facilities should be constructed in accordance with UK best practice, which includes the following requirements, amongst others:

- Double skinned oil and fuel storage tanks, or installation of storage tanks in a suitably sized and constructed concrete bund. The bund volume should be no less than 110% of the tank volume;
- Storage tanks should be designed, constructed and tested to an appropriate code;
- Areas for road tanker parking and delivery should be surfaced and drained to a receiver/interceptor; and
- Discharge of rainwater and run-off from the storage and delivery areas should be made to a treatment system designed to meet the project water discharge standards.

Vehicle maintenance facilities should be established in accordance with UK best practice.

Although some improvements were made in terms of constructing concrete platforms, several problems were still encountered at the different camps. Although all of the fuel storage tanks have been provided with secondary containment, the bunds do not currently fulfill UK best practice. Flow into OWSs was not always guaranteed and in some places OWS systems were not present. Bunding in the hazardous waste storage area at the Kurdamir Camp was broken and the bunding around a diesel storage tank at Kurdamir Camp was deliberately drilled at the base to allow for drainage. In the Yevlakh Camp, drainage from the waste storage areas was directed to an apparent containment from which the ultimate fate of the drainage could not be verified. Although none of the problems by themselves constitute major hazards, taken together they represent a significant non-compliance in terms of the potential they represent for environmental releases (*Level II Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: 1119*).

Noise monitoring is conducted daily at some construction sites (mainly camps). During the first mission it was noted that the environmental monitors in charge of this task had not always identified the closest external receptors and monitoring duration had not always allowed for the obtaining of measurements comparable with the Project limits. A Level I non-compliance was assigned for this problem, but since that visit, environmental monitors have been trained and procedures established for proper noise monitoring and the Level I non-compliance has been corrected.

Dust control is accomplished through watering. Several examples of the watering of roads and work areas were observed during the field visit.

2.5.2 Recommendations

1. The efforts already taken by BTC to improve the control of the procedures being followed by the Contractors for the monitoring of environmental components, including water quality and wastewater and gaseous effluents, need to be completed such that reliable data are obtained and reported.
2. BTC and EPC Contractors, especially CCIC, should verify the condition of closed drain systems at all camps and temporary facilities and the fate of all oily water as previously recommended. The review should include:
 - Oil water separator maintenance and discharges;
 - Collection, treatment and fate of oily water, including third-party facilities;
 - Adequacy of containment basins and collection drainage at fuel storage areas and filling stations (same as previous recommendation).
3. CCIC fueling stations, vehicle washing locations and waste transfer areas should have appropriate platforms with bunding, suitable drainage collection for spills and oily water, and oil/water separators.
4. Air emission monitoring activities, including the monitoring of dust management procedures, should be fully documented by Contractors and results should be readily available to assess compliance with commitments.

2.6 ROW MANAGEMENT

2.6.1 Observations

During the first mission, the single most important deviation from BTC plans in Azerbaijan was the length of the ongoing pipeline operations. At the time of the first February – March visit, the effective length of pipeline operations was 284 km, as none of the limited reinstatement at the back end had been accepted by BTC. More than 20 km of the ROW had open trench, which was assigned a Level II non-compliance in terms of BTC commitments, as the Reinstatement Plan only allows for 15 km of total open trench with a maximum allowable of 10 km of continuous open trench. Since the first visit, progress has been made to close the gap between the front and back ends of pipeline construction following implementation of a Recovery Plan. At the time of this mission, pipeline construction activities covered approximately 257 km. The length of open trench, however, remains a critical non-compliant condition, and the total of 36 km of open trench reported to the IEC represents a worsening situation (*Level III Non-Compliance, CCP Reinstatement Plan, Commitment ID: 172; Commitment Register: Commitments No. 45*). The issue of open trench is assigned a Level III, also because it is a repeated Level II.

The amount of open trench in the project is a critical non-compliance situation and major safety concern to the Project that implies a reasonable expectation of impending material damages. The Community Safety Plan clearly identifies these potential impacts to adjacent receptors and concerns over community safety “The pipeline corridor will contain an open trench, averaging 2.4 meters deep, heavy machinery and spoil. Although only construction personnel will be permitted to enter the working corridor of 44 meters, there is the possibility that community members and animals will nonetheless gain access to the ROW and trench. Danger will be increased at night. It is possible that livestock will fall into the open trench.” (Page 13).

Furthermore, the Community Safety Plan identifies specific mitigation measures to counter the impacts of trench hazards (Page 13) including limiting the open trench to 10 kilometers of continuous trench or 15 kilometers of non continuous trench at any one time.

As noted in Section 2.2, BTC has added senior staff to focus on reinstatement. CCIC has also added some field monitors and the two groups have been effectively working as a single team to manage reinstatement. This effort is showing significant progress. 152.4 km of Phase 2 restoration and 92.3 km of Phase 3 bio-restoration along the 12m ROW had been achieved at the time of the visit. Revegetation in the challenging Gobustan Desert area is showing good promise.

At the time of the February – March visit, CCIC had requested to be allowed to start working on the SCP ROW, but relevant Change Request documentation had not developed at the time of the visit. At the time of the visit, CCIC was about to be allowed to open up defined stretches of the SCP ROW to complete soil stripping before the wet season, which is seen as environmentally beneficial. Although, this process may be appropriate, the Change Management process for incorporating SCP construction activities along with the BTC Project has yet to be completed (see Section 2.2).

It was noted during the first visit to the ROW that erosion and sediment controls were limited, particularly at river crossing construction sites and along steep sections in semi-arid environments. Since that time, the Project has demonstrated generally good erosion and sediment control structures along the ROW and at river crossings, although based on Project documentation the IEC understands that turbidity measurements are still not consistently being taken at river crossings. As previously noted in the February – March trip report, the intent of turbidity measurements is to document pre-construction conditions, potential water quality impacts downstream and at potential sensitive receptors during construction, and the return to baseline conditions at the end of the construction phase (*Level I Non-Compliance, CCP Reinstatement Plan, Commitments ID: 1304*).

Four major river crossings were visited.

- The Djeyranchekmez River crossing (KP 9.3) where erosion and sediment control measures appeared to be limited in February – March, now appear to be well established and revegetation is beginning to start, especially in the areas being stabilized with jute matting.
- The Kor Chai crossing (KP 291.9) is effectively reinstated. The single flume at the temporary road crossing will probably not be able to handle peak river flow, but it is expected that reeds take over quickly through this wetland area.
- The Kushkar Chai crossing (KP 316.5), where turbidity impacts were previously observed, now appears to be acceptably reinstated and revegetation is starting. Erosion and sediment control structures are in place and they will need to be monitored to guarantee sufficient efficiency and stability after the first rains.
- The Ganja Chai crossing (KP295.8) was not properly flumed and the culverts beneath the causeway had washed out during a heavy rain. Although the reinstatement had otherwise been well done, the washout that occurred due to inadequate temporary controls in the part of the corridor dedicated to the SCP project represented a risk to the reinstatement. A few days after the visit, IEC was provided photographs to demonstrate that the crossing has been repaired with appropriate erosion and sediment control measures. The incident highlights a weakness in the monitoring system in that the poor installation of the flume pipes was already known as this location had already been the subject of an Incident Report as outlined in the May 04 ES Quantitative Reporting – Azerbaijan table (*Incident BTC001: 2004-103 - Inadequately installed flume pipes at Ganja Chai resulted in river water exiting the flume pipes under pressure and causing erosion. Investigation is ongoing.*).

In general, significant improvements have taken place at river crossings, but some problems still appear to remain in terms of monitoring and temporary reinstatement. The issues do not appear to be as severe as identified in February – March and the level of the previous non-compliance condition can be considered closed considering the on-going activities observed in the field.

The Project is in the process of initiating a monitoring program for additional land requests based on a form being prepared by CCIC. Data have yet to be compiled and interpreted by BTC. Monitoring of new and rehabilitated access roads is still not systematically documented and assessed by both BTC and CCIC. EFOs are being tasked with the responsibility of monitoring these areas as part of their regular responsibilities.

A large number of irrigation channels and roads continue to be crossed by the ROW. A major channel crossing was observed to be in progress at approximately KP 195 that was being constructed with appropriate environmental safeguards, except that the work area did not have a spill control kit. At KP 221 a road crossing with microtunneling and a sophisticated dewatering system was observed with appropriate environmental controls, although a synthetic silt fence might have been more effective than the bales of straw being used.

During the visit the observation was again made that topsoil is generally properly stockpiled, although the delays in implementing the reinstatement are of concern in terms of topsoil preservation. A number of incident reports continue to be opened by CCIC and BTC on topsoil disturbance and misuse, but they are generally minor issues, managed by the Contractor.

The recommendation for BTC to evaluate the additional land take by CCIC is considered closed. BTC enforces CCIC's full implementation of all the requirements of their Land Acquisition Procedure by allowing CCIC and BTC E&S teams "prior notice" thereby providing the necessary opportunity to complete baseline data collection and ecological and archaeological pre-clearance, if required.

2.6.2 Recommendations

1. The Project needs to continue to reduce the linear extent of pipeline construction. In particular, the amount of open trench must be reduced.
2. Care should be taken to make sure that temporary ROW reinstatements for the SCP do not have the potential for damaging the final reinstatement over the BTC pipeline.
3. Erosion and sediment controls need to be properly monitored and maintained, in particular where final reinstatement of the corridor has not yet taken place. Dedicated maintenance teams are recommended.
4. Spill kits need to be present at work sites, especially those where water crossings are being made.
5. Proper silt control measures (i.e., silt fences on land) should be consistently implemented during construction to minimize turbidity impacts. The effectiveness of these efforts at river and canal crossings needs to be provided by turbidity measurements and periodic inspections.
6. CCIC environmental staff should be involved in the decision process to select and maintain access roads and should develop a tracking system that allows for the systematic monitoring of their status, maintenance and reinstatement, as needed (previous recommendation).

7. CCIC should evaluate the environmental and social aspects relevant to the recovery plan, in terms of mitigating impacts that could occur due to the extended length of time that reinstatement of the 44 meter construction corridor will not be complete (including ecology, topsoil management, erosion and sediment control, land use, cultural heritage monitoring aspects, etc.). It is recommended that BTC should take the lead in this exercise (previous recommendation).

2.7 ECOLOGICAL MANAGEMENT

2.7.1 Observations

The ecological programs being implemented by the Project have been reviewed on the basis of reports and information provided by BTC.

Although some improvement has been made since the February – March mission, pipeline operations still divide much of Azerbaijan. The IEC has concerns that there could be ecological and other environmental impacts that need to be identified and mitigated. It is understood that BTC and CCIC will review this issue when there is greater clarity as to the SCP schedule.

Pre-construction ecological surveys continue to be undertaken for rare and endangered species and a number of spur-thighed tortoises (*Testudo graeca*) and European marsh turtles (*Emys orbicularis*) have been collected and relocated in appropriate habitats distant from the pipeline in accordance with the Project requirements. The monitoring of translocated irises in the Mardakan Arboretum is reported to be carried out on monthly basis.

BTC is supporting CCIC in the implementation of ecological commitments.

IEC intends and will propose to review the successful implementation of these ecological offset programs during the next in-country visit.

2.7.2 Recommendations

1. The Recovery Plan, prepared to meet construction schedule, needs to be evaluated in terms of potential ecological impacts that could occur due to the extended length of time that reinstatement of the 44 meter construction corridor will not be complete. BTC should take the lead in this exercise (previous recommendation).
2. It is recommended that all of the required information, including ecological survey and evaluation, collected during pre-construction surveys be consolidated in a single pre-construction baseline survey document (previous recommendation).

2.8 CULTURAL HERITAGE MANAGEMENT

2.8.1 Observations

Cultural heritage management is predominantly the responsibility of BTC. The governing procedures are defined in the ESAP, Appendix D as *Archaeological Late Finds Protocol*. Each Contractor has also developed *Cultural Heritage Protection Procedures* that define their obligations to report chance finds to BTC. Prior to construction, the ROW was surveyed and more than 150 archaeological potentially significant sites were identified, of which only four were found not practical to avoid. Of these four, three have been excavated (Borsunlu at KP 272; Samukh at KP 316; and Zayamchay at KP 356) and a fourth, Kasamanli at KP 405, is in the process of being excavated.

Field archaeology is conducted by the Azerbaijan Institute of Archaeology (AIA) with supervision provided by international experts under contract to BTC. Work has included monitoring of topsoil stripping and excavation work, as well as excavation of the sites identified prior to construction and chance finds. CCIC has identified several chance finds consistent with their obligations and have stopped work on several occasions.

The overall general observation is that The Project continues to demonstrate respect for cultural heritage management. The Kasamanli site at KP 405 was visited and found to be professionally managed. In this area medieval graves were being excavated and evidence was being identified to indicate the presence of settlements. The nature of the site could be observed to be extensive, but with little surface indication of what might be encountered. The decision to excavate this site on the basis that a reroute would encounter similar materials appears to be reasonable.

Chance finds identified during pipeline topsoil striping and trenching are being appropriately managed and several are being or have been mitigated with excavation or avoidance as appropriate. Examples of recent chance finds include:

- KP 204 – Agdash site: Base of large pottery vessel and burnt layer seen in side of pipeline trench.
- KP 234 – Narimankand site: Antique-period grave disturbed during bedding of welded pipe; three further widely separated graves were found during the archaeological excavation of the trench-line.
- KP 378 – Tovuz Chai: Stone settings over burials accompanied by Bronze Age pottery.

Another chance find has been identified at Hasan Su at KP 398+800 where a number of graves are visible in the stripped surface. Pottery finds indicate a possible Bronze Age date. This site was immediately isolated such that construction activities could

continue around it. Plans are to provide temporary roadway for access to river crossing, preferably over topsoil on SCP side of easement where it passes the site, to allow access for engineering work. Pipe will be stacked and welded to west of site and excavations will be completed prior to trenching.

During the February – March mission, a note was made that archaeological coverage for associated infrastructure, especially access roads and temporary facilities is not always complete. IEC has been informed that archaeological baseline surveys are now being conducted for all new Project footprints and that a process is being formalized for conducting Phase I assessments of access roads. The IEC considers this issue closed.

AIA has split into two excavation crews. This has made it difficult for the cultural heritage officer of BTC to monitor two sites at the same time.

As previously noted, a considerable amount of artifacts and data have been obtained by the archaeological teams. AIA is now the primary organization for analysis, interpretation and curation of the artifacts encountered, as well as reporting of the findings. BTC has initiated a curation training program for the Azerbaijan Institute of Archaeology (AIA), which will help them manage the substantial artifact collection obtained from the Project archaeological excavations. Monitoring of Goranboy Museum construction, sponsored by BTC, is also ongoing.

The IEC understands that an independent third party audit and review of the overall archaeological program, including the work being done by AIA, is being planned by BTC. This is a positive step to provide quality assurance procedures to the archaeological program.

2.8.2 Recommendations

1. IEC recommends that the cultural heritage staff be increased to reflect the new work procedures with two AIA work crews.
2. BTC is encouraged to continue to work with AIA to enhance the overall quality of the classification, analysis, interpretation, and curation of the archaeological surveys that have been conducted for the Project. The curation training is a good start to this effort.
3. A component of the upcoming peer review of the overall archaeological program should be to identify if there are practical ways to enhance the quality of the overall results of the work being completed by AIA.

2.9 COMMUNITY LIAISON

Community Liaison Management and public relations processes are responsible for communicating BTC Project information to the general public and the community in

areas along the pipeline route, as well as receive and transmit community information to the BTC Project. The overall objective for the community liaison and community relations teams is to build a positive, non-dependent relationship between the BTC Project and the local communities. Specific responsibilities for community liaison include, but are not limited to:

- Providing communities affected by the Project with regular information on the progress of work and the implications for these communities.
- Informing the BTC Project of any community related issues that may impact on construction.
- Monitoring implementation of mitigation measures and the impact of construction via direct monitoring and feedback.
- Managing disputes between the BTC Project and communities.
- Assisting with the implementation of community safety, health and investment programs.
- Recruiting workers from affected communities.

Community liaison is managed by a team of dedicated Community Liaison Officers (CLOs) who report to both BTC and the Contractors.

2.9.1 Observations

The IEC had limited opportunity to interview with the CCIC CLOs. Based on available records and evaluations, CCIC performance is adequate based on a generally quick response time for grievance management. It is noted that community or individual grievances in Azerbaijan are generally limited in number. The main community complaints are related to compensation from BTC, irrigation issues, damage to property and employment. CCIC is achieving 70% employment by Azeri nationals and training is consistent with Project commitments. The CCIC CLOs continue to hold numerous public meetings with various groups including governmental departments, local municipalities and community members. Community programs involve an orientation to construction activities, use of access roads and employment. A Community Safety Awareness Program is being implemented and the HIV Awareness Program has also been started.

A criticism of the community liaison program by BTC has been CCIC reduced interaction with local communities as a result of unmanned or in some instances closed Project Information Centers. It is understood that CLO's are still available and are able to cover the majority of necessary community liaison.

2.9.2 Recommendations

1. BTC needs to evaluate with CCIC the impact of closing Project Information Centers and assess whether the current activities of the CLOs adequately cover the community needs.

2.10 HEALTH AND SAFETY

2.10.1 Observations

BTC

The observations made during this visit are the same as made during the February - March IEC visit. There is an extensive effort made by the BTC organization to properly manage the safety performance of the different parties involved during the Project development. A comprehensive Health and Safety (H&S) Management system is in place and dedicated H&S Plans and Manuals have been developed. The activities performed by the H&S team are extensive and include the significant components of the most advanced safety management systems (training, monitoring, auditing, risk analysis, safety data collection and reporting, etc.). An extensive analysis of safety data and statistics is performed including incident analysis and evaluation of immediate and root causes. Results of these analyses are shared with the field staff to improve Project performance.

CCIC

As previously noted from the February – March IEC mission, the significant extent of pipeline construction activities, in addition to environmental aspects, represents a concern with regard to safety, particularly in terms of the high potential for interaction with third parties. As already indicated in Section 2.6, the stretches of the open trench exceed Project commitments, creating increased hazard conditions to third parties. In addition, as observed during the field visit along the ROW, the length of the welded pipeline string reaches several kilometers without interruptions at certain locations.

Access control to the ROW is a typical concern in any pipeline construction. Dedicated community safety awareness campaigns have been performed across the communities affected by the pipeline construction, but efforts to indicate prohibited access in the field have been found to be insufficient. Access prohibited signs at main road crossings are often missing or inadequate, and use of the ROW by unauthorized vehicles was observed.

During the visit to Kurdamir Camp, the same problems with insufficient housekeeping and poor ground surface maintenance were still apparent. Although some improvements had been attempted, problems were still observed as discussed in Section 2.5. It is expected that rains will still cause muddy conditions and create

unsafe working conditions as observed in February – March. The Yevlakh and Tovuz Camps have significantly better general housekeeping that observed at Kurdamir (gravel has been used to improve ground surfaces).

Although ROW working sites for welding operations generally have appeared to be well organized and the operations were properly monitored by an on-site safety officer, some health and safety issues were observed. At KP 405 km, simultaneous welding operations for both the BTC pipeline and SCP were observed to represent a hazardous working condition that should be avoided. Ambulances were not always readily available to provide assistance to the portions of the pipeline where the level of activity is high, in particular the areas where welding is taking place.

2.10.2 Recommendations

1. IEC recommends that safety advisors monitor and carefully control situations involving simultaneous welding if they cannot be avoided, but preferably that construction teams avoid crowded working conditions along the ROW.
2. CCIC should increase the number and the quality of appropriate warning signs to be deployed along the ROW at critical locations, to discourage third parties from the use of the ROW and to warn about the hazards of the working sites (previous recommendation).
3. CCIC should review the camp layouts to improve ground surfaces (increased use of gravel and aggregate to reduce muddy conditions); review the location and the proper maintenance of portable fire fighting systems (portable extinguishers); and improve the condition of fueling stations and fuel storage tanks (previous recommendation).
4. It is IEC opinion that the third-party aggregate and concrete source audits should include health and safety related aspects, in addition to the environmental and social aspects discussed in different sections. Both BTC and SPJV should look to influence that safety standards normally applied by the Project are adopted for significant third-party sources, eventually providing additional resources, training opportunities for workers, and appropriate PPE. The 80:20 or similar concept described in Section 2.3 would be appropriate to define where the Project should intervene.

2.11 ENVIRONMENTAL INVESTMENT PROGRAMME

During the mission, the IEC was briefly updated on the status of the Environmental Investment Programme (EIP) in Azerbaijan. No detailed review has been conducted on the seven priority themes identified in the ESAP. Similar to the ecological programs being implemented by the Project, the EIP has been reviewed on the basis of reports provided by BTC.

Following the issuance of a Request for Proposal (RFP) in early 2003 for the priority themes included in the Environmental Investment Programme (EIP), 11 proposals, out of 24 evaluated, have been short-listed according to a selection mechanism that, to guarantee transparency, has involved local and international independent organizations. In January 2004, BTC has requested the Ministry of Ecology and Natural Resources (MENR) of Azerbaijan to provide technical consultation and future partnership in the implementation phase of the EIP. Main objective of the EIP is the delivery of additional actions that are of benefit in the biodiversity promotion and conservation.

At the time of the February – March IEC visit, BTC was waiting to receive a response from MENR and to start discussions for joint review of the scopes of work and for the establishment of a Steering Committee. At the time of this visit, the EIP Phase I has been delayed because of MENR objections sent by letter to the CMT. BTC is formulating a response with an assessment of plan/options to progress Phase 1 EIP projects. Current plans are to implement a grant award strategy involving two direct grants to international NGOs and a work packet approach with local NGOs, overseen by the UNDP.

The current BTC position is that postponing or only partial implementing the EIP Phase 1 program is acceptable given MENR's position of the project. E&S Managers are exploring opportunities to expedite EIP Phase 2 as part of the CIP.

IEC intends to mobilize a specialist to conduct an independent review of EIP implementation, possibly during the upcoming mission.

3 GEORGIA

The BTC Project in Georgia encompasses 249 km of pipeline extending from Azerbaijan-Georgia border in the Gardabani District and finishing in the Akhaltsikhe District at the Turkish border. The corridor followed by the pipeline is close to the existing Western Route Export Pipeline (WREP) for a short distance from the Georgia – Azerbaijan border until the BTC pipeline deviates towards Turkey at KP 19. The BTC pipeline also follows the corridor that will be subsequently followed by the SCP pipeline, which will transport gas from the Shah Deniz field to the Georgian/Turkish border in a separate, related project. The BTC Project includes several permanent Above Ground Installations (AGIs) including two pump stations, PSG1 located at KP 4 and PSG2 located at KP 88 with associated temporary construction work camps (Jandara at PSG1 and Tetrtskaro at PSG2), as well as necessary block and check valves.

In addition to the permanent facilities, the pipeline is associated with several temporary facilities, which include:

- Temporary construction camps (Marneuli at KP 53; Tsalka at KP 111; Akhaltsikhe at KP 222), all of which are occupied.
- Temporary pipe yards for pipe (Gatchiani; Marneuli; Tetrtskaro; Tsalka 2; Andeziti and Akhaltsikhe)).

During this second mission the visit was conducted between PSG-2 to KP 52 to as far as KP 239 along the ROW.

3.1 CONSTRUCTION STATUS

The BTC Project uses a single EPC Contractor, Spie-Capag Petrofac Joint Venture (SPJV), for both pipeline and AGI construction. Current (June 27, 2004) construction progress is as follows:

- *Facilities* – Pump Station PSG1 is reported to have an overall completion of 57.2%; PSG2 is reported to be at a 48.4% overall completion.
- *Pipeline* – ROW clearing and grading, 221.4 km; pipe stringing, 213.5 km; trenching, 132.5 km; pipe in ground, 103.1 km; backfilled, 37 km; interim reinstatement of the 12-m wide ROW corridor completed between KP 0 – 30 and KP 128 – 140 (total 42 km). Construction has just started in the Borjomi area.

Pipeline construction for a second spread is being conducted by Punj Lloyd Ltd (PL) as a subcontractor to SPJV. Spread 2 covers KP 196 to KP249.

Georgia has several river crossings (Mtkvari (Kura) East at KP 29; Algeti River at KP 53; Gheti River at KP 75; Beiutchai River at KP 116; Gumbati River at KP 137; Ktsia River at KP 139; Chil Chil River at KP 174; Borjomula River at KP 182; Kumiska River at KP 184; Oshora River at KP 186; Sakirula River at KP 199; Mtkvari (Kura) West at KP 225; Potskhovi 1 at KP 240; and Potskhovi 2 at KP 245).

Only one is proposed for horizontal directional drilling (HDD), the Mtkvari (Kura) East River crossing near Rustavi (KP 29), being drilled at the time of the visit. Crossings still remaining to be completed at the time of the D'Appolonia visit included the Algeti, Gheti, Beiutchai, Chil Chil, Borjomula, Kumiska, Oshora, Sakirula and Mtkvari (Kura) West river crossings, as well as the Mtkvari (Kura) East crossing that was ongoing. D'Appolonia was able to visit the Algeti, Gumbati, Ktsia, Borjomula, Kumiska, Oshora, and Potskhovi 1 River crossings.

3.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

3.2.1 Resources and Organization - Observations

BTC

The BTC in-country organization is fully staffed, with the addition of a new E&S Training Coordinator, two Cultural Heritage Field Officers and an additional Environmental Field Officer since the February – March mission. An Incinerator Commissioning Engineer and an additional archaeologist are being added in July. It is recognized that the environmental staff includes senior personnel with previous experience with similar large pipeline construction projects. It is expected that staffing and resources are sufficient to manage the second spread.

The social management organization of BTC is discussed in Section 3.9.

SPJV

The SPJV E&S organization continues to lack critical staff. In particular, a biorestitution specialist is still needed and as a result SPJV has had difficulty in addressing biorestitution issues to the satisfaction of BTC. Additional positions pending staff acquisition include a wastewater laboratory technician, a process/mechanical engineer to finalize commissioning of the incinerator, an environmental engineer to serve as a replacement for the BTC consultant for the wastewater treatment system, and an ESMS coordinator.

E&S organization audits were implemented by SPJV in March and May 2004, erasing a non-compliance flagged by BTC.

3.2.2 Resources and Organization - Recommendations

1. SPJV should fill the organizational vacancies identified by BTC. In particular, senior personnel are needed in addition to the team already in place to assure that there is adequate follow up of the remedial actions started by BTC in several fields and to work to promote an improved environmental awareness in their work force.
2. SPJV should consider including E&S team leaders in the Sponsor's meetings, to share the problems in the field directly/face to face with Project management.

3.2.3 Management of Change - Observations

The significant Deviation Request regarding the final reinstatement of BTC only after the construction of the parallel SCP pipeline is still pending, although a decision has been made and procedures are being followed to implement this procedure in the field. Evidence that the Project has developed sufficient E&S documentation and analyses to support this decision has not been provided. BTC reported that the supporting documentation should be available in October 2004. A second significant Deviation Request, approved by BTC in April 2004, was the interim use of the "Sarini" incinerator to dispose of non-hazardous mixed waste considered to be becoming a health hazard at the Central Waste Management Area (CWAA) at PSG-1. This Management of Change is further discussed in Section 3.4.

3.2.4 Management of Change – Recommendations

The interaction between the BTC and SCP construction activities along the entire pipeline portion in Azerbaijan and Georgia is discussed in the February – March mission report and is not repeated.

3. The IEC continues to recommend that the Project complement the current Change Management documentation with an adequate comparative assessment of the potential impacts related to changes in construction procedures associated with the construction of the SCP and to define an environmental, social and safety management plan relevant to the new construction strategy.

3.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, borrow pits and irrigation systems. In addition, the review of this topic includes camp water supplies and general aspects of camp management.

3.3.1 Observations

BTC

Third party sources of supplies, in particular aggregate and cement/concrete are still not being consistently evaluated in terms of their compliance with ESAP requirements in the cases where the Project represents a significant percentage of their production. It is understood that BTC is considering a process to evaluate whether a specific facility should be considered under the “umbrella” of the ESAP. A possible approach, recommended by IEC, could be based on Project usage, such that, for example, if 80% of a third-party source of aggregate, concrete or other major supply is dedicated to the Project, that Project standards should be followed. If the source is less than 20% dedicated to the Project, it can be excluded. If it is between these percentages, the operations should be audited for major issues (e.g., sand and gravel should not be obtained from dredging in an active river channel), but national standards can generally be followed. It is understood that the Project is in the process of evaluating this type of process.

SPJV

As noted above, SPJV has three operating work camps along the pipeline ROW (Marneuli, Tsalka, and Akhaltsikhe), as well as two that serve the pump stations (Jandara Camp at PSG1 and Tetrtskaro Camp at PSG2). The two pump station temporary construction camps have a maximum capacity of approximately 450 workers, each, while the temporary pipeline camps have various combined workforces of up to about 750. During this mission the camps at Tsalka, Tetrtskaro at PSG2, and Akhaltsikhe were visited as well as PSG2 and the Bakuriani Maintenance Area with the following observations:

- *Water supplies:* IEC acknowledges that BTC has taken the responsibility of assuring compliance with potable water testing and reporting. The test records from Akhaltsikhe were obtained as an example of potable water testing procedures. Test records were readily available from a centralized databank. There are three wells at the Akhaltsikhe Camp, two shallow and one deep. Only the deep well is used. Water has been demonstrated to be of generally good quality, although there have been problems with TDS interpreted to be from the backwash in the filtration system. In any case, bottled water is used for drinking and washing food in the kitchen. Where coliform problems have been found, follow-up testing was immediately conducted and none were found. The problems have been interpreted to originate from an improper holding time for the lab testing. Based on the information provided for the Akhaltsikhe Camp, potable water is managed in an acceptable manner. In general, the IEC considers the Level I non-compliance related to water quality testing identified during the February – March mission is closed. An issue still remaining with all camps using well water is sustainability, which is still pending, although the IEC was informed that SPJV was bringing in a

hydrogeologist for these studies in July (*Level I Non-Compliance, CCP Infrastructure and Services, Commitment ID: N13 (P27)*). This is a repeat of the non-compliance identified during the February – March mission.

- *Project footprint*: Land use at camps, access roads and borrow pits continues to be evaluated on the basis of preconstruction surveys consistent with BTC Project commitments.
- *Irrigation channels*: Irrigation channels are a significant issue along portions of the pipeline ROW. Based on field observations and the near lack of grievances filed by farmers, SPJV appears to be managing irrigation channels within BTC Project commitments.
- *Aggregate*: As noted in the comment to BTC above, supply and batch plant operations for concrete from third-party sources are still not being controlled by SPJV and BTC. Permits have been obtained for borrow pit development and usage, but plans for closure of these facilities appear to be lacking. Borrow pits are now being used for supplying backfill for the portions of the pipeline ROW where blasting has produced excess rock. One example of this type of borrow pit was visited at KP 107. This excavation had previously been subject to poor extraction procedures and the highwall appeared to be unstable. Extraction by SPJV was not improving this situation. The borrow pits/quarries used for trench backfill are also likely to be disposal sites for the excess rock. As noted during the February – March trip, subsoil disposal areas have specific BTC Project requirements for reinstatement.
- *Road Crossings*: Road crossings along the pipeline ROW appears to have been managed within BTC Project commitments.
- *Access roads to the ROW*: Access roads appear to have been managed within BTC Project commitments.
- *General Camp Management*: Housekeeping problems due primarily to mud were observed at PSG2 and the PSG2 camp, both of which would have benefited by establishing a working surface before the beginning of construction. Similarly, the Bakuriani Maintenance Area has housekeeping problems due primarily to mud. The camps at Tsalka and Akhaltsikhe were found to be clean and well-managed. Some specific problems to be resolved in the area of waste management for all of the camps are identified in Section 3.4.

3.3.2 Recommendations

1. Borrow pit development needs to take place taking into account that reinstatement to at least pre-existing conditions will be required. The baseline assessment for the borrow pit visited at KP 107 provides for leaving the site

with some reclamation, but the extraction process did not appear to be improving conditions, so care will need to be taken to make sure that it is practical to stabilize the highwall.

2. SPJV needs to complete water sustainability studies as needed (previous recommendation and related to the Level I non-compliance indicated above).
3. Third-party sources of cement and concrete should be properly audited by SPJV to verify their compliance with BTC Project safety and environmental standards according to the criteria in the lines of the one stated above.

3.4 WASTE MANAGEMENT

3.4.1 Non-Hazardous and Hazardous Waste – Observations

In spite of initiatives taken by the Project in Georgia to solve chronic problems related to waste management, particularly regarding the operation of the incinerator, the management of domestic waste has only marginally improved since the February – March mission. In terms of the amount of stored waste pending disposal, the situation has deteriorated. The incinerator operated by SPJV at the Central Waste Accumulation Area (CWAA) at the Jandara Camp at PSG-1 is intended to be the disposal solution for incinerable non-hazardous non-recyclable/re-useable waste for all of BTC's operations in Georgia. Hazardous waste is being properly stored until BP finalizes the construction of the hazardous waste landfill and other non-hazardous waste is re-used or recycled when possible. This incinerator has not properly functioned since its installation. Although significant improvements to the incinerator have been made since the February – March IEC mission, air emissions are not yet properly monitored and at the time of the IEC visit the equipment was broken and pending repair. Nevertheless, the Project is optimistic that it will not be necessary to seek a Change Management process to reduce the emissions standards from Dutch or EU standards. At the end of June incinerator production volumes were low, only about 1-2 tons/week.

Because of these problems, about 190 tons of “mixed waste” (i.e. domestic/municipal waste that is non-hazardous, non-reusable/recyclable such as plastics, paper, aluminum etc., that has been contaminated with minor quantities of food) have accumulated at the CWAA. The storage of this waste is considered to be an unacceptable risk by the Project Health management. The Project has tried to reduce these waste quantities by using a non-compliant third-party incinerator operated near Rustavi to dispose of putrescible non-hazardous waste. Permission for this interim was given to SPJV by BTC through approval of a Deviation Request in April 2004. The Rustavi facility does not have a license from the Georgian Ministry of Environment (MoE), but at the time of approving its use BTC was informed by the operator that it did. Subsequent investigations found this to be inaccurate and its use ceased in June 2004.

The MoE has indicated their preference solving this domestic waste management problem by using a municipal waste disposal site near Tbilisi. The Project has reviewed two of these government permitted waste disposal sites, Gldani and Iagljudja and concluded that the Iagljudja dump has an acceptably low environmental impact, although it is not compliant with Project standards. The Project has not made a final decision on the procedures to solve the problem of excess accumulated domestic non-hazardous waste.

Part of the problem associated with waste accumulation, according to IEC observations, has been segregation at the source. Kitchens are the source of much of the “mixed waste” problem because at some locations, for example Tsalka Camp, kitchen waste intended to be segregated into organic waste, paper, plastic, bottles, etc. actually, in several cases, all contained a mixture of the different waste streams. The cross contamination of organic waste (food waste) contamination and other types of waste significantly contributes to the volume of the waste that can become difficult to manage and, finally, a health hazard.

Significant quantities of non-hazardous waste are reportedly recycled via approved third-party commercial facilities and local communities, including food waste for pig farms, wood waste, and scrap metal. Used oil is stored at the CWAA and recycling/disposal options are still under consideration by SPJV and BTC, including the development of a new BP hazardous waste facility at Sagarejo, to be compliant with EU standards.

Some improvements were observed with respect to waste management in terms of labeling and tracking compared to what was observed during the February – March mission, but improvements still needed. The PSG-2 Camp area contained hazardous waste neatly and the containers were labeled, but one container was also used for storing non-hazardous materials because of a lack of space. The waste management area for the Tsalka Camp is under construction, but appears to be well designed. The waste segregation and storage area at Akhaltsikhe Camp is clean and well managed. Although hazardous waste is properly identified through labeling, some improvements could be made by including information on the generator of the waste, date received, and having an identification number such that individual drums can be tracked (a similar system to the one applied in Azerbaijan by AA Service should be applied). Some problems with the containment of waste were encountered as discussed in greater detail in the presentation of pollution prevention in Section 3.5.

Improvements to many of the waste handling procedures need to be contrasted with the overall deterioration of the waste management situation in Georgia, with the use of a non-compliant incinerator to dispose of mixed putrescible waste, which is considered to be a significant breach of Project commitments (*Level II Non-Compliance, CCP Waste Management Plan, Commitment ID: J34, Part I*). The continuing operation of the Project incinerator with improper emissions control is also a non-compliance (*Level II Non-Compliance, CCP Waste Management Plan, Commitment ID: J34, Part I and J36*).

3.4.2 Non-Hazardous and Hazardous Waste - Recommendations

BTC

1. BTC needs to work with SPJV to define a solution to the accumulation of unsanitary “mixed waste” at the CWAA. The plan to use an existing municipal waste disposal site which is not it compliant with Project standards is not considered acceptable by IEC.
2. BTC should evaluate immediately the environmental consequences of the use of the sub-standard incinerator and eventually evaluate the remedial measures that should be implemented to mitigate the potential impact.
3. BTC should start immediately a process for the identification of alternatives including:
 - a. the realization of a new dedicated controlled (compliant with Project commitments) landfill;
 - b. interim solution with the long term storage of the domestic waste according to applicable EU standards (including packaging and storage on lined platforms) waiting for final acceptable disposal options.
4. BTC should review its practice to adhere to national practices or BP BU policies and procedures and strictly be compliant with Project commitment as stated in the ESAP and in any other relevant documents; if a third party incinerator is to be used, efforts will need to be made to monitor emissions to demonstrate that Project standards are achieved.
5. Conduct a general review of waste management for SPJV facilities to determine if improved waste segregation could reduce the quantities of “mixed waste” that need to be disposed.

SPJV

6. Hazardous waste containers with incinerator wastewater should be stored in banded areas, with appropriate secondary as noted in greater detail in Section 3.5. Minimization of potential contact of hazardous waste containers and potentially contaminated storage areas with stormwater (e.g., using roofs or overpack drums) should be implemented, particularly taking into account that hazardous waste will have to be stored on site until a suitable disposal option is identified by BTC (see Section 3.5).
7. Improve labeling such that individual drums of hazardous waste can be tracked from source to final destination (“cradle to grave management”). A good example of waste tracking that could be a Project standard is being conducted by AA Services in Azerbaijan servicing the ACG Project.

8. Ensure that contamination of non-hazardous waste with organic waste (food waste) is minimized to avoid potential health risk and vector issues, especially at the CWAA (previous recommendation).

3.4.3 Wastewater Management - Observations

IEC acknowledges that sewage treatment, which is a general problem for the Project all along the pipeline route, is less of an issue in Georgia because BTC has worked with SPJV to achieve compliance by engineering improvements to the existing equipment, adding new equipment, and constructing reed beds for tertiary treatment. Wastewater treatment at Marneuli and PSG1 Camps were shown to be under control at the time of the February – March visit, after non-compliant startups. Non-compliant conditions for wastewater disposal occurred when the Tetrtskaro, Akhaltsikhe and Tsalka Camps were starting up, which is common with packaged activated sludge waste water treatment units. Common to many other locations along the pipeline, STPs were not adequately sized/designed to treat all of the wastewater streams. The Project added additional treatment capacity, but the main difference between Georgia and other parts of the Project has been the use of reed beds for tertiary treatment. With simple, relatively inexpensive designs that can be constructed with non-specialized construction crews, Georgia is close to achieving full compliance with Project effluent standards. The reed beds represent a viable improvement option for the other countries and IEC recognizes the effort made by BTC to bring the Contractor to the compliant condition.

A significant effluent stream is the scrubber liquor from the PGS1 incinerator. This waste stream has also proved to be problematic for the Project in Azerbaijan, but in Georgia the Project has constructed a small neutralization/precipitator tank for removing the suspended solids, heavy metals, and dioxins and furans from this effluent and test results show compliance with EU standards.

At the time of the February – March visit some parameters had not been tested (i.e., coliforms, oil and grease, nitrogen, ammonia, total phosphorous, fluorides, phenols, sulfides), although they are included in the Project specifications. These tests are now being made with a laboratory in Tbilisi. The complete suite of test results from this laboratory show compliant discharge from the Akhaltsikhe Camp effluent discharge. The previous non-compliance finding can be considered closed.

3.4.4 Wastewater Management – Recommendations

1. External accredited laboratories should be identified to perform periodic verification testing as soon as practical. Although the involvement of local laboratories is to be encouraged to promote local business and strengthen technical capacity, use of accredited laboratories for periodic testing for additional parameters consistent with Project specification, should be considered. If it is not practical to provide verification with an accredited laboratory due to problems with transportation and holding times, consider auditing the laboratories with a specialist trained in U.S. or European practices to verify that proper testing procedures are being followed and that QA/QC procedures are appropriate.
2. Although the discharges from the reed beds are better protected than was observed during the February/March visit, the Project should consider eliminating all single-point discharges with potentially easy access to third parties.

3.5 POLLUTION PREVENTION

3.5.1 Observations

As already described in Section 2.5 for Azerbaijan, the Project has adopted a pollution prevention plan aimed at systematically identifying potential impacts from construction activities and implementing avoidance and mitigation measures to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. The mitigation measures include: spill prevention and management; management of existing contaminated areas, if any found during construction; groundwater protection; surface water protection; ecological receptor protection; air quality protection and dust mitigation; noise control; soil erosion control and topsoil protection.

Various provisions apply directly to the protection of surface and ground waters, including: permanent fuel and chemical storage, hazardous material storage, vehicle maintenance facilities, wastewater discharges, controlling run-off, and disposal of trench water and groundwater. Especially stringent procedures are being defined for the Borjomi area, as further discussed below.

BTC, as already mentioned in the February – March trip report, is preparing specific documentation in response to the 13 conditions indicated by the Georgian government for the Environmental and Social Impact Assessment approval. The documents are not available yet, although a close-out matrix has been provided with the status of the response. Some of the agreed actions fall into the engineering field; the IEC will monitor the implementation of the agreed actions, with respect to the potential effects on the environmental and social commitments. It is noted that, based on information made available by the Project, agreements from the

Government of Georgia (GoG) on the Environmental Risk Assessment document, as well as on biodiversity issues were expected by March-April 2004, however they were not available yet at the time of this mission. Potential impacts to river morphology at the Kura west crossing were being evaluated. The design of the groundwater and surface water monitoring program for the BTC pipeline system includes definition of a “sanitary zone” in accordance with Dutch or EU standards. A strategy for public meetings and information centers to increase community awareness for the restrictions associated with the installed pipelines was under preparation. A specific report entitled “Summary of Submissions to Fulfill Continuing Activity 9 - Borjomi Zone” was issued in April 2004. The draft Oil Spill Response Plan was also issued in mid-April 2004.

Upon request of the Georgian government, the contaminated land method statement is being also updated to include management of potential finds of anthrax contamination.

SPJV

Some problems still remain with respect to the physical environment of areas where spills or contaminated water could be present, primarily at fueling areas, vehicle washing sites, and some of the waste accumulation sites. These problems are camp-specific, as camp and workplace conditions are variable. A general overview with a few example situations are identified on the basis of locations visited:

PSG2: The waste accumulation area lacks appropriate bunding. The vehicle wash area at PSG2 is being modified to contain wash water and drain it through an OWS, but the system is not yet functional. Bunding in the maintenance area is not effective and the OWS has been damaged by a truck collision. It is marginally functional.

PSG2 Camp: The fueling area at the Camp is being improved following a non-compliance issued by BTC to SPJV four months ago. Construction is ongoing, but the fueling area for vehicles has no containment, no OWS for collected runoff or a roof. OWS construction is underway, but it is not obvious that a spill on the concrete would actually drain to the OWS. The bunding for the main diesel tanks do not appear to be able to contain the volume of the tanks and should be reviewed.

Tsalka Pipe Yard and Maintenance Area: At the vehicle washing area the OWS is outside the fence and does not have easy access. The fueling area does not have appropriate spill containment, but repairs were ongoing at the time of the visit. Across the facility at several areas where concrete platforms should be present, this containment measure was still missing. According to the Contractor they will be installed in the near future. A new waste storage area is being constructed, in an apparent appropriate manner, and at the time of the visit was being used for storing some non-hazardous waste.

Tsalka Camp: The fueling area for the generators does not have appropriate spill containment, i.e. a concrete platform at the loading area.

Akhaltzikhe Camp: No significant problems were identified. The fueling area was properly banded and the OWS was clean. The waste segregation area was also well constructed and clean.

Bakuriani Pipe Yard and Maintenance Area: Containment systems in the fueling, wash and waste management areas were under construction at the time of the visit, but appeared to be generally well done. The most significant issue at this area is the disposal of wastewater from a cement batch plant into an unlined pit with no treatment, containment and/or monitoring being conducted (*Level II Non-Compliance, CCP Waste Management Plan - Commitment J19(S6)*). A dual chamber decantation system allowing for the collection of sludges and the discharge of clean water, probably with neutralization would have been preferable.

None of the problems at camps and work sites by themselves represent high critical hazards, but taken as a whole they represent a non-compliance for the potential they represent for an environmental release (*Level I Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: H42*).

Noise monitoring continues to be conducted at construction sites and at locations where CLOs have received complaints. The Project was able to provide monitoring records that the locations and frequency of this monitoring are compliant with Project requirements.

Dust control was observed as being achieved through watering inside working areas as well as across communities affected by Project traffic (e.g. Tsalka).

Vehicle air emission is monitored through periodic inspections. Nevertheless, the May 2004 ES Qualitative Report prepared by BTC indicates that where vehicles were tested at pipeline work sites, all were found to be non-compliant with respect to VOCs.

Vibration monitoring continues to be conducted at blast sites. As noted in Section 3.10, the number of complaints recorded by the Project associated with property damage claims from ground vibrations mainly due to construction traffic has increased. The vibration monitoring data reviewed by the IEC are indicative that it is unlikely that blasting has caused any building damage. It is noted that the human perception of blasting through air waves and ground vibration is much more sensitive than the ground motions associated with building damage, even with poorly constructed buildings. IEC believes that complaints are therefore inevitable, even when damage has not taken place given the amount of heavy truck traffic or blasting that has had to be conducted along the pipeline route.

The protocols for anthrax were finalized and approved by the Georgian Government. Audits were conducted of the Project's program for anthrax management by an advisory group to the Georgian Government and no non-compliances were identified.

3.5.2 Recommendations

1. The ongoing review of the condition of closed drain systems and the fate of oily water needs to be completed - BTC and SPJV. The review should include:
 - Oil water separator maintenance and discharges;
 - Adequacy of containment basins and collection drainage at fuel storage areas, vehicle wash racks and filling stations.
2. Background conditions (pre-blast or pre-heavy traffic conditions) should be assessed at locations where a potential impact from blasting or from Project traffic along roads significantly used by the Project has been identified. It is important that the Project takes a proactive approach in this matter, taking into consideration the significant amount of complaints received by SPJV and BTC on alleged damages to houses and properties due to blasting and/or heavy traffic (repeat recommendation).
3. Where concrete batch plants are operated, properly manage the wastewater. The Bakuriani Yard batch plant disposal pit is non-compliant with Project specifications and should be decommissioned and the wastewater properly contained and treated, as required, before discharge into the environment.
4. Conduct additional emissions testing and maintenance, as required, to achieve compliance for vehicle emissions.

3.6 ROW MANAGEMENT

3.6.1 Observations

The difference between the front of pipeline construction and backfilling and temporary reinstatement has decreased since the February – March visit (about 110 km reduced to about 82 km). An important issue identified during this visit is the length of open trench: during the mission and the reporting phase, the IEC has received contradictory information from BTC and SPJV on this aspect. During the mission, the IEC was provided with construction progress reports prepared by the Contractor and indicating a long length of open trench, reported to be approximately 30 km, above the maximum committed length (15 km) according the ESAP. This would be a non compliance with ESAP commitments (*CCP Reinstatement Plan, Commitment ID: 1104; CCP Community Safety, Commitment ID: Q8*). However, BTC has subsequently contended this figure, provided by its Contractor, and

indicated to the IEC that, according to the data collected in a engineering department construction status survey performed mid to end of July 2004, the length of open trench is about 14 km. This latter figure was provided to IEC by BTC, although it was confirmed that SPJV reports are still indicating longer sections of open trench and that the discrepancy was still not resolved. The IEC considers this situation the evidence of a weak control and management of the open trench issue, which is a critical issue and has been found to be systemic throughout most of the Project in all three countries. Non-compliant conditions may result in material damage as represented by potential severe injuries and consequences to people, domestic or wild animals, beyond what the Project has committed to. Pending appropriate verification and confirmation, the IEC consider the lack of consistent information and the lack of appropriate, systematic and updated monitoring of the amount of open trench a serious management issue and a significant non-compliance to be promptly addressed (*Level II Non-Compliance, CCP CCP Reinstatement Plan, Commitment ID: 1104, 1108; CCP Community Safety, Commitment ID: Q8*).

The SCP continues to be strung in some locations and is being installed at the major crossings. The entire 44 m wide corridor for both BTC and SCP pipelines continues to be cleared and topsoil accumulated. As noted in Section 3.2.3, the decision to simultaneously construct BTC and SCP is a significant change management, which, although justifiable in terms of optimization of construction activities, requires careful planning and close monitoring of the environmental and social aspects to identify and mitigate potential specific issues. Reinstatement is restricted to a 10-12 m width of the BTC corridor and final reinstatement across the entire ROW (about 44 minus 12 meters, equal to about 32 meters) will be undertaken only after completion of the SCP pipeline. Some successful reinstatement within the 12 m BTC corridor was observed during this mission.

As previously noted during the February – March mission, it was observed during the visit that topsoil management is generally adequate, although there were apparent differences along ROW sections in terms of topsoil stockpile slope and compaction and segregation from subsoil. During this visit, stockpiles not compliant with the technical specifications stated in the SPJV Reinstatement Plan were observed, where topsoil and subsoil were mixed or where piles of topsoil exceeded the 2-m height limit (*Level I Non-Compliance, CCP Reinstatement Plan, Commitment ID: 139, 142*).

The project is making use of the Bakuriani Alpine Botanic Garden to aid in the reinstatement of floral species of interest (rare and otherwise) along those portions of the ROW where the relevant species were directly impacted by ROW clearance, as per the Project Rare Floral Species Management Programme. Although this effort is worthwhile, the size of the plot and the number of plants being grown may be, according to IEC opinion, limited when compared to the areas where relevant floral species were directly impacted by ROW clearance and therefore requiring specific biorestitution measures.

The most challenging aspect of ROW management in Georgia is the removal of excess rock blasted from both the BTC and SCP trenches. The rock cannot be reinstated in the trenches unless it is processed by a rock crusher. Although rock crushers are being operated to their full capacity, it is not practical to prepare enough crushed rock to make a significant contribution to backfilling operations. As a result, large amounts of rock are piled along the ROW and more will accumulate when the SCP trench is opened up. Borrow pits are being used to supply the aggregate needed for backfilling. The problem of excess rock, found along most of the pipeline route, represents a problem that may significantly delay restoration.

As noted above, visits were made to the Gumbati, Ktsia, Borjomula, Kumiska, Oshora, and Potskhovi 1 Algeti River crossings. In terms of construction impact mitigation at river crossings, good interim erosion measures were observed at these crossings. Turbidity measurements taken by environmental monitors indicating that the crossings were conducted with acceptable care for erosion and sediment control were provided. Reinstatement over the BTC portion of the ROW at the crossings observed has been well done.

During this visit, a borrow pit at KP 107, where the Project is basically the single operator, was visited. Documentation relevant to the environmental and social assessment was made available by the Project. As noted in Section 3.3, this borrow pit had previously been subject to poor extraction procedures and the highwall was unstable. Stabilization of this highwall with benching will be required. The borrow pits/quarries used for trench backfill are also likely to be disposal sites for the excess rock

3.6.2 Recommendations

1. The Project with BTC and SPJV working together needs to continue to reduce the linear extent of pipeline construction. In particular, the amount of open trench must be carefully, promptly, continuously and jointly verified, monitored, controlled, managed and minimized by BTC and SPJV construction and environmental teams.
2. Although generally good practices were observed, topsoil stockpile procedures need to be strengthened in a few areas, especially considering that final reinstatement will not take place until installation of the SCP. Issues include seeding, mulching, monitoring of anaerobic conditions, shaping and compacting pile surfaces and establishing runoff controls.
3. As already recommended for Section 3.3, borrow pit development needs to take place taking into account that reinstatement to at least pre-existing conditions will be required.
4. As noted for Section 3.2, SPJV still needs to recruit a senior reinstatement and biorestation specialist as soon as practical (previous recommendation).

5. BTC should ensure that the actual needs in terms of reinstatement of endangered plants along critical portions of the ROW are fully monitored in the field and periodically assessed and documented, and the Rare Floral Species Management Programme is properly implemented.

3.7 BORJOMI AREA

3.7.1 Observations

The Borjomi Work Region extends from about KP 176 to KP 196. This area is one of the most significant parts of Georgia in terms of environmental, economic, cultural and aesthetic considerations. The area is part of the catchment of Borjomi Mineral Water, which is one of the most significant private developments in Georgia. Communities in this area are hopeful that tourism will be redeveloped and are concerned that the Project will adversely impact the landscape and their prospects for tourism.

The Project has committed to strictly following best practices with multiple lines of protection and redundancy in design and operations to achieve as close to “zero risk” as practical. Critical areas requiring special consideration include topsoil preservation, protection of water crossings, slope protection, erosion and sediment control systems, recontouring to original topography, careful replacement of topsoil and revegetation as required.

The Project has dedicated special efforts to make sure that staff is fully aware of the sensitive issues that need to be addressed in the Borjomi area. A seminar entitled “Environmental Stand Down for the Borjomi Area” was attended by line management, supervisory and construction staff and E&S and H&S staff. In total 40 staff attended this orientation. A Construction Readiness Review procedure was initiated by BTC prior to commencement of construction.

The ROW within the Borjomi area was visited from KP 188 where tree felling had started to the Borjomula River crossing at KP 181.6. Within this area pipe stringing has started, but trenching has not yet taken place. The Oshora River at crossing exhibited good erosion and sediment control systems. Traffic along the ROW had damaged some ditches near the Borjomula crossing, but overall conditions were still good. Topsoil management was also observed to be good in this area. SPJV has been instructed to install a layer of geotextile or other similar permeable barrier to prevent the mixing of topsoil and subsoil, where necessary. Respect for cultural heritage was observed at KP 185, where excavations for what is probably a small medieval monastery had been completed.

3.7.2 Recommendations

1. SPJV should establish an *ad-hoc* maintenance crew specializing in erosion and sediment control systems to make sure that there are no system failures in this special area.
2. All special procedures and working plans should be ready before significant construction starts (especially, management of blasting activities, management of surplus rock, maintenance procedures, noise monitoring, waste management, etc.). The Construction Readiness Review procedure initiated by BTC prior to commencement of construction has been a good start to ensure preparedness.

3.8 ECOLOGICAL MANAGEMENT

3.8.1 Observations

The ecological programs being implemented by the Project have been reviewed on the basis of information and reports provided by BTC.

As discussed above and also highlighted for Azerbaijan, the front of the pipeline is well in advance of interim reinstatement. In addition, the SCP is already being strung in some locations and the 44 m ROW has been cleared. Final restoration has not been achieved for any portion of the pipeline, because it will not be undertaken until completion of the SCP. A 10-12 m wide corridor over the BTC pipeline is currently being restored with 42 km of interim restoration reported to be complete at the time of the visit.

Pre-and post-construction ecological surveys continue to be completed in accordance with the Project requirements. Both floral and faunal studies have been conducted since the February – March mission. Permanent plots have been established to monitor impacts of the BTC pipeline on floral biodiversity off the ROW,, with no significant impacts to report. Monitoring of faunal species has included: migratory bird counts at Lake Kumisis (KP 42-45) and Lake Jandari; baseline studies of the common otter along the ROW; turtle counts at the Mariin channel, monitoring the habitats of the Syrian spadefoot toad at KP 11 and two control plots, count of the snake-eyed lizard at Lake Kumisi; migratory bird counts in Tsalka, corncrake count in Tsalka; and a grouse survey. Reports for these surveys were still being drafted at the time of the IEC mission. Consistent with the Biodiversity Monitoring Programme, BTC will provide, at a minimum, annual reports to the Ministry of Environment. The first detailed report submission is expect in October, after the summer field work season is complete.

Some outstanding issues related to the conditions for approval of the ESIA by the Government of Georgia are relevant to biodiversity, including *inter alia* agreement on the basis of the biodiversity monitoring for flora and fauna, list of species to be propagated, list of sensitive areas, reforestation, and assistance for the management

planning of protected areas. A two-day workshop was held with representatives of BTC and the Georgian Government March 28 – 29, 2004. As a result of this meeting agreement was reached on the basis and scope of biodiversity monitoring, and on the scope and basis of the Rare Floral Species Programme, among others. Documents have been prepared on eco-compensation and management planning for Ktsia-Tabatskuri area. These are being reviewed by the Ministry of the Environment. At the time of the IEC visit, the details of these programs are still under discussion with MoE.

IEC intends and will propose to review the successful implementation of these ecological offset programs during the next in-country visit.

3.9 CULTURAL HERITAGE MANAGEMENT

Cultural heritage management is predominantly the responsibility of BTC. The governing procedures are defined in the ESAP, Appendix D as *Archaeological Late Finds Protocol*. The definition of significance and actual excavation of sites is the responsibility of the Centre for Archaeological Studies (CAS), the Georgian government's cultural properties review and compliance agency, as specified in the *Georgian Law on Cultural Protection*. SPJV is responsible for reporting chance finds and stopping work until the BTC Cultural Heritage Field Officers (CHFOs) can evaluate the situation in association with CAS and provide appropriate guidance.

Cultural heritage was an important factor in defining the current ROW as part of the EIA process and numerous reroutes resulted from consideration of archaeology and historic monuments. The result of the Phase I studies identified about 45 potential archaeological sites within or near the pipeline ROW. Of these sites, 15 were identified as requiring more detailed Phase II investigations. Of these sites, eight were identified as being of high priority at locations where it was not practical to reroute the pipeline and Phase III excavations were undertaken. These investigations are now complete and a Phase III reporting is complete. BTC has recently taken on additional staff to assist CAS in bringing field work, laboratory studies, and technical reporting more in line with the best practices and standards accepted by the international scientific community.

Current activity has related to the management of late finds. The BTC Cultural Heritage Field Team conducts "look ahead" surveys and monitors clearing, soil stripping, grading, trenching and other construction activities. They are also responsible for writing daily and weekly reports, identifying non-compliances, updating databases and coordinating with CAS and BTC and SPJV management. At the time of the visit, 222 potential late finds and one recent burial had been identified, of which 22 sites were considered to be significant and requiring excavation.

3.9.1 Observations

As previously reported, the overall field archaeological program along the ROW and associated access roads, additional land acquisitions and AGIs appears to be consistent with Project commitments. Where finds have been encountered in the ROW, evidence has been observed of fundamental protective procedures, including ROW reduction and rerouting. Nevertheless, although field work is of acceptable quality, significant difficulties are reported in working with CAS on these late finds.

An additional complication for the Project is that CAS is not the only Georgian government agency with jurisdiction for cultural heritage. The other government agency is the Ministry of Culture, Department for Protection of Monuments in Georgia (Monument Department). This regulatory body has recommended additional site protection measures including conservation and restoration work for four properties and reroutes on portions of the ROW where there are problems with land and geotechnical engineering (KP 194, 199, and 201). Apparently, the Monuments Department has threatened negative publicity if the Project doesn't undertake conservation/restoration for architectural properties near the ROW, a position contested by BTC, who have indicated that no additional mitigation for adverse effects is warranted. The BTC position is that there is no demonstrable risk of Project impacts to these resources based on previous vibration monitoring experience at other similar locations, also taking into account that reroutes have been considered and implemented where feasible.

The above operational problems confirm the concern previously identified by the IEC that the analysis, interpretation and curation of the artifacts encountered, as well as reporting of the findings, might experience some difficulties during implementation which may cause them not be up to international standards.

3.9.2 Recommendations

1. As noted in the February – March mission report, BTC will need to take care, together with CAS, that the analysis and reporting are consistent with international standards. It is recognized that this is a complex issue when artifacts are managed by the host government, and BTC should endeavor to work with CAS such that the capacity of CAS to work to international standards is enhanced.
2. A peer review of the overall archaeological program including the work being done by CAS is recommended to identify if there are practical ways to enhance the quality of the overall results of the work being done.
3. The Project should come to an agreement with the Monument Department on the issues identified by that organization. The peer review might also be a mechanism to mediate between the Monuments Department and BTC.

3.10 COMMUNITY LIAISON

The Community Liaison Teams of BTC and the JV are responsible for communicating BTC Project information to the general public and the community in areas along the pipeline route, as well as receive and transmit community information to the BTC Project. The overall objective for the community liaison is to build a positive, non-dependent relationship between the BTC Project and the local communities. Specific responsibilities for community liaison include, but are not limited to:

- Providing communities affected by the Project with regular information on the progress of work and the implications for these communities.
- Informing the BTC Project of any community related issues that may impact on construction.
- Monitoring implementation of mitigation measures and the impact of construction via direct monitoring and feedback.
- Managing disputes between the BTC Project and communities.
- Assisting with the implementation of community safety, health and investment programs.
- Recruiting workers from affected communities.

The BTC social programs are managed by a Social Programs Manager supported by two field social coordinators, one for each Spread, who in turn are supported by seven CLOs. SPJV employs a Community Relations Coordinator who in turn is supported by six CLOs with several assistants. A significant change in the Project affecting the CLO organization has been the addition of the Punj Lloyd (PL) organization as a subcontractor to SPJV for Spread 2.

3.10.1 Observations

The environment for community liaisons in Georgia continues to be difficult. During this visit, IEC team members were prevented from visiting the Borjomi area for a short time because of road blockages due to grievances apparently related to compensation. CLOs were not interviewed during this mission and the interpretation is based primarily on documents presented to the IEC, internal reporting observations and information provided verbally by Project management.

- BTC CLO staffing has improved and is now basically complete. There is some concern that SPJV's staffing is limited, in particular the component under PL. BTC and SPJV are providing support as needed to PL.

- Road blockages by residents with complaints are representing a major impact to construction.
- Most grievances are related to land compensation associated with land acquisition and other construction impacts, which is being evaluated by the SRAP. Other complaints relate primarily to vibrations, damage to roads and dust and have increased since the last IEC visit. Nevertheless, nearly all of the complaints are resolved within 30 days. Most of the grievances related to vibrations are commonly dismissed based on the results of monitoring. It is understood from the Project that situations where pre-construction surveys might be useful based on the potential for significant ground motion have not been encountered, which is the reason the Project operates in a reactive mode and why most claims have been determined to be baseless.
- The Borjomi Community Information Center was visited and appears to be well-constructed and managed.
- The process of employment by SPJV is reported to be fair and transparent.
- BTC and SPJV CLOs are continuing to have community meetings including basic community safety briefings in schools in advance of construction. Employment and pre-construction meetings have been held in Borjomi and Akhaltsikhe districts as construction activities increase. The HIV/STI outreach and education project has been initiated with orientations held in each camp.

3.10.2 Recommendations

1. Although the CLOs have exhibited good effort in communicating information to local communities, much of their efforts are associated with responding to social problems. More effort should be placed to actively work with local communities to work out grievances before they lead to residents physically blocking access to work areas.
2. CLOs need to work with the construction and environmental staff to make sure that vibration monitoring is conducted in the most appropriate locations. Pre-condition surveys of potentially affected homes are recommended where there is a likelihood that vibration levels from traffic or blasting could cause damage to structures.

3.11 HEALTH AND SAFETY

3.11.1 Observations

BTC

There is an extensive effort made by BTC organization to properly manage the safety performance of the different parties involved during the Project development. A comprehensive Health and Safety (H&S) Management system is in place. As noted in the February – March mission report, the IEC believes that it is extremely important that Managers and Supervisors be recognized for efforts made to provide a safe working environment and commends BTC for implementing the Five Star Incentive Program to promote safety. Also, the IEC understands that the February 25th death noted in the February – March mission report has been thoroughly investigated and changes made to promote increased safety for workers.

At this point in time worker safety is generally well managed, although some observations related to worker safety are provided that indicate some improvements could still be made and that needs to focus on specific aspects relevant to the field implementation of required safety standards. These minor observations need to be fixed as soon as practical throughout specific dedicated review/inspection/audit campaigns to be jointly performed by BTC and Contractor organizations.

SPJV

Worker Safety

During the mission, the IEC team had the opportunity to visit the PSG2, the PSG2 Camp, Tsalka Camp and the Tsalka Pipe Yard and Maintenance Area, Akhaltsikhe Camp and the Bakuriani Pipe Yard and Maintenance Area. Issues frequently identified were the lack of grounding cables to operating generators and the identification of several near-empty or un-inspected fire extinguishers. Although the use of PPE is generally good, the IEC again points out that the only places in the entire Project where the use of coveralls in a construction area is not mandatory is at PSG1 and PSG2. Where rock was being broken to prepare feedstock for the rock crusher, heavy equipment was being operated in close proximity and it was not clear to the site H&S representative if the JSA for this operation accounted for the equipment to be working so closely together.

Community Safety

As previously noted from the February – March IEC mission, the significant extent of pipeline construction activities, in addition to environmental aspects, represents a concern with regard to safety, particularly in terms of the high potential for interaction with third parties. As already indicated in Section 3.6, there are conflicting information from different Project parties (BTC and SPJV) on the length

of open trench which impacts the evaluation on compliance with Project commitment. The amount of open trench is a significant factor, potentially creating increased hazard conditions to third parties. A Level II Non-Compliance was raised as a result of the lack of proper monitoring and, therefore, effective management of this critical aspect. In addition, and as observed during the field visit along the ROW, the length of the welded pipeline string reaches several kilometers without interruptions at certain locations.

Access control to the ROW is a typical concern in any pipeline construction. Dedicated community safety awareness campaigns have been performed across the communities affected by the pipeline construction and it is recognized that SPJV has adequately adopted the use of warning signs and has adequately alerted third parties about the hazards of the working sites along the ROW. Although SPJV discourages the use of the ROW by non-Project-related vehicles, several were observed. In one case a farmer's tractor was observed to follow the ROW because continuous pipe was blocking the route he would otherwise have taken.

Many of the grievances received by the CLOs relate to the impacts of truck traffic within villages. The issues are road deterioration, dust, and general safety.

3.11.2 Recommendations

1. As noted in the February – March trip, most of the aggregate and concrete used for the construction of the pump stations is purchased from local pre-existing enterprises. IEC encourages that the Project develop a procedure for identifying businesses where the Project should have some control of worker safety, as well environmental issues, based on their relative percentage of Project involvement.
2. Make sure that the community is protected from the hazard of open trenches. It is understood that local communities are provided safety awareness briefings, but the CCP for Community Safety also states: *Fences will be used close to occupied properties or sensitive areas where this is deemed the most appropriate mechanism to assure safety of people, livestock and property. Fencing and illumination will be used at all trench crossing points.* These physical measures need also to be considered, as appropriate.
3. As previously noted, efforts should be made immediately to monitor more closely the amount of open trench present at any time in the field.
4. Periodic field reviews/inspections/audits dedicated to specific H&S issues (e.g., fire fighting systems; appropriate use of PPE; loading/unloading; load transportation, etc.) should be started and jointly performed by BTC and SPJV H&S organizations (previous recommendation). One issue to be evaluated is the operation of heavy equipment in close proximity, such as at the rock crushing location at KP 102, and taking care when parallel pipeline construction

operations are conducted simultaneously (this was specifically observed in Azerbaijan).

5. Audits of third-party facilities providing services/goods to the Project (i.e., aggregate and concrete sources) should include health and safety related aspects. The Project, through BTC and SPJV, should encourage local enterprises for the adoption of Project safety standards, eventually providing additional resources, training opportunities for workers, and appropriate PPE (previous recommendation).
6. The existing policy established to avoid truck traffic through villages if other options are available, even if these options represent longer driving distances, (e.g., use the ROW to a greater extent) needs to be strengthened.
7. The sections of welded pipeline are frequently very long, causing inconvenience to third-parties who have subsequently used the ROW as a transportation route. Third party access control is difficult but should be improved.

3.12 ENVIRONMENTAL INVESTMENT PROGRAMME

During the mission, the IEC was briefly updated on the status of the Environmental Investment Programme (EIP) in Georgia. No detailed review has been conducted on the priority themes identified in the ESAP. Similar to the ecological programs being implemented by the Project, the EIP has been reviewed on the basis of information and reports provided by BTC.

Based on an information update provided by BTC, the following status can be reported:

1. *Caucasian Black Grouse Research*: This research was awarded in January 2004 and is proceeding on schedule.
2. *Ecosystems and Species Conservation in Georgia: Brown Bear*: This research was awarded on 22 June 04 and is currently starting up.
- 3-4. *Small Grants for NGO Capacity Building and Public Awareness / Environmental Education*: BTC/SCP has taken the decision to combine these two themes into one grant. The RFP was announced mid-May and tenders are due mid-July. The grant award is expected to take place the end of August 2004.
5. *Management Planning for the Ktsia-Tabatskuri Managed Reserve*: The Ministry of the Environment is reviewing BTC's proposed strategy and has promised feedback by mid-July 04. BTC expects that negotiations and

Parliamentary approvals, as required, will take place this year, with real management planning activities starting next year.

6. *Borjomi-Kharagauli National Park Support Zone Program*: This program is currently undertaking stakeholder consultation to determine best use of BTC/SCP investment. BTC will make decision by the end August with respect to the best way to move forward depending on the outcome of consultation.
7. *Sustainable Forest Pilot Program*: A forestry consultant is expected to begin in July 04 to start to develop this program.
8. *Forest Eco-Compensation Program*: This program is currently being negotiated with the Government of Georgia. A letter outlining the basic scope of this program and the roles that would be played by BTC and the Ministry of the Environment (MoE) were outlined in a letter from BTC to MoE dated June 28, 2004.

IEC intends to mobilize a specialist to conduct an independent review of EIP implementation, possibly during the upcoming mission.

4 TURKEY

The BTC Project in Turkey encompasses 1,083 km of pipeline extending from the Georgia - Turkey border in the Posof District (Turkgozu border gate) to the marine terminal being constructed at Ceyhan on the Mediterranean Sea. From the Georgian border, the pipeline ROW crosses the provinces of Ardahan, Kars, Erzurum, Erzincan, Gumushane, Sivas, Kayseri, Kahramanmaras, Osmaniye and Adana, terminating at Ceyhan. The BTC Project runs parallel to the recently completed (2001) East Anatolian Natural Gas Pipeline (NGP) for about 30% of its length (approximately 320 km), between the cities of Erzurum and Sivas (Lot B). The SCP Pipeline is parallel to the BTC pipeline at the Georgian border, but diverges until it terminates in Erzurum.

The BTC Project in Turkey is broken down into three Lots from the Georgian border to Ceyhan: Lot A (278 km), Lot B (465 km) and Lot C (340 km). Each Lot effectively operates as a separate construction project with the following characteristics:

Lot A: KP 0 – 278

Contractor: TEPE – Nacap JV (TPN)
Spreads: 2, plus another small spread
Block valves: 15
Major crossings: 3 rivers, 6 roads, 3 railways
Camps: 1 main (Kars at KP 115), 2 spread camps
Pump station PT1 at KP 21.3 and pigging station IPT2 at KP 108 (Contractor TEPE)

Lot B: KP 278 – 743

Contractor: Gunsyil-Haustadt & Timmerman-Max Streicher-Alarko JV (STA)
Spreads: 3 (as per contractor recovery plan)
Block valves: 24
Major crossings: 9 rivers, 13 roads, 3 railways
Camps: 1 main (Kova at KP 527 in Spread 1), 3 spread camps (Iliça and Tercan in Spread 1; Koyunkaya in Spread 2)
Pump station PT2 at KP 278 and PT3 at KP 442 (Contractor TEPE)

Lot C: KP 743 – 1083

Contractor: Punj Lloyd - Limak JV (PLL)
Spreads: 2
Block valves: 13
Major crossings: 10 rivers, 6 roads, 1 railway
Camps: 1 main (Azizli at KP 1037), 3 spread camps

Pump station PT4 at KP 744 and IPT1 at KP 944 (Contractor TEPE)

The BTC Project terminates at the Ceyhan Marine Terminal (CMT), which includes 2.6 km long jetty and offshore loading facility, seven one-million barrel storage tanks, a central control building, housing compounds and administration, and a fiscal metering system (TEKFEN is the Contractor).

All three Lots in Turkey were visited in June and July 2004. The Ceyhan Terminal was not visited during this mission as it was reviewed in March 2004. A detailed work schedule of the field visit is provided in Appendix A.

4.1 CONSTRUCTION STATUS

Winter weather had slowed construction progress at the time of the last visit in March 2004. Since then, the construction pace has significantly accelerated and over 130 work fronts are currently open in all three Lots (based on figures provided by EPC contractors at the time of the visit, 27 work fronts were open in Lot A, 54 work fronts in Lot B, and 52 work fronts in Lot C). Current (July 2004) construction progress is as follows:

- **Facilities**

Pump Station : 4 stations in construction, PT4 is most advanced. PT1 - 17%, PT2-16%, PT3-17%, PT4-18%.

Pump Station Camps: about 90% complete as a whole and partially occupied.

Intermediate Pigging Station, IPT1: detailed information on construction progress not provided. However, construction started in May 2004. At the time of the visit, excavation and concrete pouring activities were ongoing. Completion is planned for end of 2004.

- **Pipeline**

Lot A - clearing and grading – 203 km (73%), stringing – 152 km (54%), welding (126 km) – 45%, trenching – 57.8 km (20%), lowering – 35 km (12%), backfilling – 29 km (10%), reinstatement – 0 km (0%).

Lot B - Construction progress is about 40% overall of the 395 km ROW – stringing – 334 km (88%), bending – 320 km (81%), welding – 305 km (77%), coating – 221 km (56%), trenching – 174 km (44%), lowering – 142 km (36%), backfilling – 124 km (31%), reinstatement – 2.5 km (0%). Construction is concentrating on completing high elevation areas (above 2000 m) by 15 September 2004.

Lot C - Progress 61.5% overall - clearing and grading – 292.3 km (88%), stringing – 244.6 km (74%), welding – 228.5 km (69%), trenching – 158.3 km (48%), lowering – 153.6 km (46%), backfilling – 145.9 km (44%), reinstatement – 16 km (5%).

4.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

4.2.1 Resources and Organization – Observations

In Turkey, a turnkey contract was signed between BTC and BOTAŞ who subsequently awarded EPC contractors the construction work in each of the three Lots, the Pump Stations, and at Ceyhan Marine Terminal. BTC maintains an assurance role over both BOTAŞ and the five EPC contractors.

Since the time of the March 2004 monitoring visit, IEC has observed an improvement in Environmental and Social (E&S) management between BTC, BOTAŞ and the EPC contractors. This was noted in all three Lots and at the three pump station sites visited on this occasion. All three parties appear to have improved their operational relationship and are working together in a consensual manner to resolve environmental and community relations issues. However, despite this improved working relationship, E&S personnel mentioned there are ongoing difficulties in engaging construction management in realizing the importance of E&S issues, as well as health and safety issues. It is IEC's opinion that this may be also related to the relative inexperience of most of the BOTAŞ and EPC Contractor E&S staff.

Lack of mobility and vehicles was also cited as a major problem affecting the ability of the EPC contractor E&S teams (as well as H&S teams) (*Level I Non-Compliance, Environmental Management Plan - Turkey, Commitment ID: APC1E84*). This was observed for all Lots, but it was particularly highlighted by the EPC staff in Lot A and also Lot C (for H&S team).

BTC

The BTC License to Operate (LTO) organization has changed somewhat since the March 2004 visit in order to address the need for oversight of reinstatement activities. One expatriate reinstatement specialist has been hired in each of the three Lots to join and strengthen the existing LTO monitors, which are two for Lot and are in charge of covering also the relevant Pump Stations. A vacancy for one LTO currently exists in Lot B due to a recent resignation. As noticed in March 2004, the BTC assurance organization, through their programs of auditing, inspection and monitoring, continues to focus on formal compliance of documents and activities completed by BOTAŞ, supplemented by field monitoring of the commitments by the LTO's.

BOTAŞ

BOTAŞ continues to expand on its organizational capacity for E&S management that was implemented earlier this year. In addition to the oversight capacity of BOTAŞ Ankara, headed by the Environmental Manager and supporting staff, Environmental

Supervisors are now in place at each of Lot A, B and C and the CMT. One Environmental Supervisor is responsible to oversee all four pump stations. Environmental, Community Relations (CR) and Archaeological Monitors have been hired in each Lot, at each of the pump stations and at the CMT. As noted in March 2004, a dedicated reinstatement specialist is in place in Lot C and the Environmental Supervisor for Lot A is also experienced in ROW reinstatement. There is no reinstatement specialist in place for Lot B. BOTAŞ is lacking an environmental monitor for Spread 3 in Lot A. A Turkish consultant firm, CINAR, continues to provide third party monitoring support in environmental management and ecological issues.

Since the time of the previous IEC visit, BOTAŞ has significantly expanded their capacity to monitor the E&S performance of the five EPC contractors. In addition, to review and collection of information in the field, the data is collated into various registers of a centralized information system managed by the BOTAŞ Ankara office.

TEPE – Facilities

There still is no Environmental Manager for TEPE. Although there appears to be sufficient environmental staff, including 5 environmental engineers and 5 environmental monitors based in the five facilities under construction (four Pump Stations and IPT1), as well as an assistant lead environmental engineer, the lack of the Environmental Manager needs to be immediately addressed to ensure senior level commitment to environmental management at all pump stations (*Level II Non-Compliance, Environmental Management Plan - Turkey, Commitment ID: APC1E34*).

TEPE has a Community Liaison Manager and one Community Liaison Officer at each pump station (five CR staff in total). CR personnel appear to be adequate in number to perform their work duties.

TEPE-NACAP (TPN) – Lot A

There are currently 1,735 personnel present in TEPE-NACAP (TPN) for Lot A, including 371 management, 7 engineering, 6 procurement and 1,351 construction staff. There are 26 Health & Safety (H&S) personnel, 15 medical staff, 20 environmental staff and 7 CR staff.

There has been a significant turnover in contractor E&S personnel in Lot A. A new Environmental Manager was hired in March 2004. There are no dedicated reinstatement specialists on staff, although the new Environmental Manager is experienced in ROW reinstatement.

There appears to be a recent greater commitment from senior management to E&S issues in Lot A. One example is the reported resolution of the issue relevant to the long-standing lack of Emergency Response Teams (ERT's) that were still not in

place at the time of the site visit. Four ERT's have been proposed by the environmental management team with their own vehicle and pollution control/cleanup equipment. During the visit, it was reported that the four ERT's were approved for supposed mobilization by Friday 9 July.

E&S and H&S personnel reported that a lack of vehicles was affecting mobility to the field; many times staff double up with other personnel, although it was reported that new vehicles were on order.

STA – Lot B

STA appears to have improved their environmental management and community relations capacity since the time of the last visit in March 2004. There is a new Environmental Manager since March 2004 joining the Environmental Supervisor, four Environmental engineers, nine Environmental Inspectors, eight Archaeologists, three Ecologists, two Soil Specialists and two trainers. There is no dedicated contractor reinstatement specialist currently for Lot B.

CR staff in Lot B is sufficiently organized with one CR Manager, two CRO's for Spread 1 and three CRO's for Spread 2.

Taking into consideration the high number of open work fronts (more than 50 at the time of the visit) as well as the total length of Lot B ROW, E&S personnel are stretched in terms of resources, catching up on previous deficiencies, as described in March 2004 report, and keeping up with the pace of construction progress.

PLL – Lot C

Since the time of the previous IEC mission in March 2004, PLL has added more environmental personnel including two ecologists, an environmental engineer and two archaeologists. However, their reinstatement specialist was reportedly leaving the project at the time of the visit, and a replacement is being sought. The BOTAS reinstatement specialist is currently assisting with reinstatement efforts.

There are no differences in CR personnel since the last visit in March 2004. There are four CRO's and one CR Manager.

4.2.2 Resources and Organization - Recommendations

1. IEC noted an improvement in coordination between BTC, BOTAS and the EPC contractors since the time of the March 2004 visit. All three E&S organizations are working together as an integral team to resolve environmental problems. BTC and BOTAS coordinate their oversight role and often work together in raising project NCR's. IEC encourages the senior management of BOTAS and the three EPC contractors to continue to support E&S initiatives of their staff and ensure full compliance with ESAP commitments.

2. EPC contractors should ensure that E&S (and H&S) personnel have an adequate number of vehicles to perform their job in the field.
3. TEPE currently still does not have an environmental manager for construction at the pump stations. This situation was noted in the March visit and immediate action should be taken to fill this position.
4. While BTC has in place reinstatement specialists in each Lot, BOTAŞ and the EPC contractors still lack some dedicated reinstatement expertise, specifically in Lot B (BOTAŞ and EPC Contractor) and Lot C (EPC Contractor). Both BOTAŞ and each EPC Contractor should urgently fill these positions to demonstrate a commitment to the importance of reinstatement of the ROW in accordance with provisions of the ESAP.

4.2.3 Management of Change (MOC) – Observations and Recommendations

In Turkey, the BTC LTO organization in Ankara is not usually involved in the management of Class I change procedures, including reroutes, as a consequence of the turnkey agreement with BOTAŞ. BTC LTO Ankara is involved in the event of a proposed Class II or III change. The BOTAŞ organization in Ankara relies to a large degree on their field supervisors for the assessment and approval of the change requests, although information is regularly passed to Ankara for their overall management.

Documentation supporting the change request for one minor reroute was provided to the IEC during the June-July mission. The change request was made to protect the road leading up to Meryemcil Castle from construction activity in Lot C. A document entitled “Environmental and Social Assessment of the Proposed Reroute No. PLL-RCR-019 from Chainage 943.911 to 944.267” was reviewed.

The proposed reroute passes within 250 m of the original reroute and is reported in the document as a Class 1 change. An environmental and social assessment of the proposed route change was completed. The following comments pertain to the route change documentation and reiterate observations made in March 2004 pertaining to documentation supporting other change requests:

- The methodology in the report describes that a site visit was undertaken from 16-18 September 2003 but there is no mention of what specific site investigation activities were undertaken.
- Figure 1 which is a map showing the original and proposed reroute is not clear as to the separate routes and there is no scale provided. There is no reference to the map in the text of the report.
- The quality of technical analysis is superficial and it is not clear how the fieldwork supports the conclusions made in the document.

- There is reference to additional faunal surveys that will be done before reopening the route, but no additional documentation was provided.
- The report and supporting documentation refers to public consultation on the route change as construction notification and safety/traffic awareness meetings and the process cannot be considered consultation as such.

The overall document is complete but the analysis is superficial in what is required to support a change management request for a route change. In addition, reasons for the reroute were straightforward and the decision to reroute the ROW was appropriate. IEC recognizes the effort in support of the change management process, but strongly encourages improvement of the technical quality of future documents, as already highlighted in the March 2004 visit report.

IEC stresses that the quality of the documentation in support of the MOC should be adequate. When a Class II or III reroute is to be assessed, the supporting documentation should be of the same quality of the Environmental and Social Impact Assessment as approved by the Lender community.

4.2.4 Non-Conformance Records (NCR) Register – Observations and Recommendations

The latest NCR Register was provided by the Project during the June-July visit. The following is a summary of the total number of NCR's (for the entire construction period to date) and remaining open NCR's.

LOT/Facility	Total NCR's	Open NCR's
Lot A	65	23
Lot B	155	37
Lot C	43	5
PT1	13	2
PT2	25	0
PT3	17	4
PT4	41	4

IEC notes there are a significant number of open NCR's in both Lot A (23) and Lot B (37) compared to the other facilities. Some of these open NCR's date back to 2003 such as waste oil storage at Hanak Camp (8 August 2003) and inadequate flumes pipes in the Posof River in Lot A (29 October 2003). In addition, there are three

Level III non-compliances in Lot A that are still open with no action, some dating more than two months, and relevant to the following issues: 1) pipeline trench excavation at a river crossing undertaken without the required and necessary water quality monitoring and sampling; 2) poor soil management practices in Spread 3; and 3) effluent truck emptying wastewater into the Hasankale River on Access Road 127. Although the NCR Register reports them as Level III non-compliances, IEC was subsequently informed by the Project that the actual non-compliances are recorded in the monthly reports and subsequently reconciled with the NCR register. The Project also informed IEC that these level III were classed as Level II in the Monthly report to be consistent across the project and with the definitions given in the ESAP, and that the registers will be updated.

IEC recommends that BOTAŞ and the EPC contractors in Lot A and B work together to develop an immediate action plan for dealing with all open non-compliances in an effective manner, particular the open Level II or III NCR's. In addition, the NCR register must be kept current to ensure that all changes are properly recorded and reported to the parties.

4.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, and irrigation systems. In addition, the review of this topic includes camp potable water supplies and general aspects of camp management.

4.3.1 Observations

Visits to the following construction camps in Turkey were made during the June-July mission:

- IPT1 (TEPE)
- Andirin Camp (PLL – Lot C)
- Orensehir Camp (PLL – Lot C)
- PT4 Camp (TEPE)
- Kova Camp (STA – Lot B)
- PT3 Camp (TEPE)
- Cadirkaya Camp (STA – Lot B)

- Ilica Camp (STA – Lot B)
- Koprukhoy Camp (TPN – Lot A)
- Kars Camp (TPN – Lot A)
- Hanak Camp (stopped – no walkaround – TPN – Lot A)

Camp construction has concluded in all three Lots with the exception of the Orensehir Camp that was still under construction at the time of the visit and the Cadirkaya Camp that was nearing occupancy. Both the Azizli and Ilica camps were downsizing at time of inspection.

The following observations have been made from the visits to these camps:

- *Water supplies:* Water testing results were requested from camps where a walk-around was conducted. In Turkey potable water is required to be treated to comply with WHO Guidelines and Turkish Standard TS266 *Water Intended for Human Consumption*. Water quality testing is done inconsistently between Lots and not always for the same parameters. With the exception of PT3, water quality results at other camps were inconsistently reported, with some values missing. The frequency of sampling was also found to be not consistent throughout the camps. Additionally, there are no indications of sample protocols and laboratory analytical procedures and QA/QC procedures in the data provided.

The inconsistency in testing procedures as reported previously in March 2004 was largely due to a lack of attention and limited procedures developed by the Project, including BTC, the various EPC Contractors and BOTAŞ. A similar non-compliant situation was found as part of the June-July 2004 visit, although some actions to improve sampling and collect more consistent data were reported (*Level I Non-Compliance, BOTAŞ Environmental and Social Management Plans, Commitment ID: CH9E3, CH4E41*).

As noted in the IEC report for the March 2004 mission, WHO Guidelines and EU standards define the need for baseline testing, which has not been done, as well as the parameters that need to be tested and the frequency of those tests. The IEC was informed that a Phase I assessment to define sampling and analytical plans for baseline data to be collected from the different water sources was completed by BOTAŞ. Phase II of the study, including sampling and testing, was just starting at the time of the visit.

- *Camp/temporary facility footprint and housekeeping:* Most of the camp facilities in Lots A, B and C are completed or nearing completion. The footprint of camps in Lot A was noted to be significantly larger than the other Lots, that could pose a

problem for future reinstatement. Specific comments pertaining to those camps visited in June-July 2004 follow:

- Lot A: Camps have a large footprint and appear to be oversized for their function and planned growth. This is a lesser issue at Kars and Hanak camps than at Koprukhoy camp. There is frequent storage of equipment on unstripped soil such as pipe storage. This could pose future problems for site reinstatement. Good housekeeping was noted during a stopover at the Hanak camp. All other camps require improvement in housekeeping.
- Lot B: the size of the new camps appears to be adequate. Overall improvement and greater commitment of contractor to housekeeping and providing adequate accommodation were observed at Kova Camp, compared with the observations made during the March 2004 visit. Ilica camp is being slowly downsized, however housekeeping still requires attention. Good reinstatement of the Pipe Storage Area 20 (one of the three emptied, out of 25 total) was observed.
- Lot C: the footprint of the new camps appears to be adequate with the exception of Orensehir Camp which is likely over-designed and could pose problems for reinstatement. Housekeeping at the Andirin camp was to a lesser standard compared to other camps visited in Lot C, particularly with respect to maintenance and cleaning of drainage and sump pits.
- Pump Stations: the size was found to be adequate, but significant earthworks were noted at PT3 and PT4.⁶ Camps were found to be adequately designed and managed. Attention should be paid to reinstatement and landscaping of temporary facilities, including camps, batch plant areas, top soil and surplus material stockpiles. Good housekeeping procedures were noted at all camps visited.
- *Aggregates*: Turkey is the only country where BTC/BOTAŞ have developed a specific CCP for aggregates. Aggregate management is still an issue of concern across all three Lots, particularly in Lot A where 109 small borrow pits have been reportedly used by the Project, in addition to 6 licensed quarries. Although it was reported that agreements are usually made at community level for the use of these borrow pits, the IEC observed Project-related equipment operating at some *ad-hoc* borrow pits, where there are concerns in terms of proper management of topsoil and final reinstatement. Third party sources of supplies, in particular aggregate and cement/concrete still are not being consistently evaluated throughout the Project in terms of their compliance with ESAP requirements in the cases where the Project represents a significant percentage of their production. The overall picture of aggregate management is still unclear in terms of pre-construction assessment and operation management concerning environmental protection, safety and community relations, and reinstatement

⁶ Site visits were not undertaken at PT1 and PT2, but a significant footprint was noted at PT1.

commitments (*Level II Non-Compliance, Aggregate Management Plan, Commitment ID: APC10E1 CHI7E6*).

4.3.2 Recommendations

1. The issue of consistent potable water quality sampling procedures and reporting across the three Lots and pump stations in Turkey identified during the last IEC visit in March 2004 remains unresolved as of June-July 2004. A recommendation made in March 2004 for a thorough review of potable water sampling, testing and reporting procedures conducted by experienced professionals does not appear to have been considered. BOTAŞ should therefore work with the five EPC contractors to develop established and consistent potable water parameters, sampling protocols and analytical procedures. This should also include the identification of certified testing laboratories and an independent third-party evaluation to assess if they are reliable.
2. Baseline water quality data and indications that potable water from well sources in all three Lots and the Pump Stations fully complies with WHO standards should be made available as soon as practical.
3. BOTAŞ, in coordination with BTC and the five EPC contractors should develop a post-construction reinstatement strategy for all temporary facilities, including camps, pipe storage yards, borrow pits, aggregate extraction sites and surplus material storage areas.
4. Aggregate management is a significant environmental and social concern for the project in Turkey. The Project should clarify for which aggregate extraction sites the Project is the main user and implement a common strategy on how to deal with this issue. It is IEC's opinion that if a significant percentage of a third-party source of aggregate, concrete or other major supply is dedicated to the Project, then Project standards are to be followed. In any case, the operations should be audited for major issues (e.g., sand and gravel should not be obtained from dredging in an active river channel), but, if the Project use is less than a significant percentage, Turkish national standards could generally be followed. This issue will require a coordinated approach to aggregate management between BTC, BOTAŞ, EPC contractors and local communities and a management strategy for use of 'outside the gate' facilities, including reinstatement, once project needs have been satisfied. This will also require increased monitoring by environmental staff before, during and after aggregate extraction is concluded.
5. The issue of the use of small borrow pits needs to be clarified and resolved, particularly in Lot A.

4.4 WASTE MANAGEMENT

4.4.1 Non-Hazardous and Hazardous Waste – Observations

Waste management in Turkey was raised as a key area of concern during the IEC visit in March. Waste management practices were noted to have improved significantly across all Lots and the Pump Stations since the time of the March visit.

In particular, the CWAA's are now in full operation and demonstrate that good attention is being paid to waste segregation, labeling and containment measures. Labeling at all CWAA's for Lots and Pump Stations was found to be significantly improved and appears to be adequate. MSDS were available for waste streams in some but not all facilities. PPE use was observed to be sufficient in all the visited CWAA's.

EPC contractor personnel reported that Project hazardous and mixed wastes are transported to the Izaydas waste management center in the Izmit region (northwest Turkey). The Center is reported to be EU requirement compliant with the exception of the treatment of facility leachate/industrial wastewater. In March 2004, it was noted that the Izaydas wastewater treatment facility was due to be upgraded to bring it in compliance with EU requirements. The upgrade was still under discussion between Izaydas and BOTAŞ at the time of this visit and an additional audit of the site was under preparation by BOTAŞ.

Waste management registers are maintained by all EPC Contractors and were reviewed in June-July 2004.

Data management and information collected by BOTAŞ from the EPC Contractors were found to be improved, although in some cases the IEC noted problems in the reporting of figures relevant to waste generation and that improved QA/QC is needed.

EPC Contractors have identified waste management options and most third-party facilities have been audited and subsequently approved by BOTAŞ.

The following comments pertain to waste management at each of the facilities visited.

TEPE (PT3 and PT4)

TEPE has identified third-party recyclers for plastic, paper, metal and glass wastes. Non-reusable / non-recyclable non-hazardous waste, hazardous waste and medical waste are collected and sent to the Izaydas waste management center. Organic wastes are treated on site by grinding and disposal at the Wastewater Treatment Plant (WWTP).

At PT3, waste registers were examined for hazardous and non-hazardous waste. The manifests appear to be well-organized indicating date, name of the waste transporter, waste receiver and volume of waste by type. The hazardous waste register has records since 21 December 2003 indicating the shipment of various hazardous waste streams to Izaydas. Mixed waste (non-recyclable garbage) appears to be listed as “contaminated waste” and also is designated as going to Izaydas.

The waste register provided for PT4 contains records for non-hazardous waste, including mixed waste, and no records for disposal of hazardous waste, although relevant waste manifests were provided. PT4 staff reported that shipments of hazardous waste, including waste oil, are going to Izaydas.

The Central Waste Accumulation Areas at PT3 and PT4 are well organized, demonstrating a significant improvement by the Contractor across all pump stations compared with what was observed at PT2 during the IEC visit in March 2004. Appropriate procedures for waste segregation, labeling, waste manifests and access to MSDS were observed.

An issue to be addressed is the significant subsoil storage areas, particularly at PT3. It was reported that an agreement was being sought with the EPC Contractor for Lot B on the reuse of this material as pipeline trench backfill.

TEPE-NACAP (Lot A)

TPN has identified third-party recyclers for plastic, paper, metal and glass wastes. Non-reusable / non-recyclable non-hazardous waste, hazardous waste and medical waste are collected and sent to the Izaydas waste management facility. Organic wastes are sent to a pig farm in Erzincan and waste wood is recycled to local communities. Waste oil is sent to Ankara for recycling. The waste management register for Lot A was examined (includes Kars Camp, Koprühoy Camp and Hanak Camp). Wastes are listed by type, including date of shipment, origin, destination and volume or weight. In addition there are summary tables by month. Records of the waste register show that hazardous and non-hazardous non-recyclable waste (reported as domestic waste in the register) is transferred to Izaydas.

The CWAAAs were examined during the site visits at the Kars Camp and Koprühoy Camp.

The CWAA at Kars was clean and waste was well segregated, stored and labeled. Workers also showed good use of PPE. The building where hazardous waste was stored is roofed and has a concrete floor that, however, appeared to be significantly deteriorated, likely posing a containment problem in the event of a spill. The areas are properly bermed or banded. The drainage sump and runoff collection system appear to be adequately designed. Bioremediation trials are also being initiated for remediation of hydrocarbon wastes. The CWAA at Köprühoy Camp was clean and waste was properly segregated. HW storage area is properly concrete-paved, roofed

and bermed. HW was properly segregated and stored in containers and drums. There was sufficient labeling noted. However, the CWAA is not completely banded and there is a potential for spills or runoff to drain outside of the site. It is also noted that the CWAA is located in one of the lowest spots of the camp, and therefore it is likely to receive runoff from camp areas which are at higher elevations.

STA (Lot B)

STA has identified third-party recyclers for plastic, paper, metal and glass wastes. Non-reusable / non-recyclable non-hazardous waste, hazardous waste and medical waste are collected and sent to the Izaydas waste management center. Organic wastes are sent to a pig farm in Erzincan.

The waste registers for Kova, Ilica, and Koyunkaya Camps were examined and were found to be well organized and separated into hazardous and non-hazardous components. Volumes, dates, origin and receiver are indicated. There are gaps in reporting dates in the database, sometimes up to two weeks between entries; however staff at the Kova Camp reported that waste is transferred to Izaydas every ten days. There are also no wastes reported for the Cardirkaya Camp and the CWAA is newly in operation.

Hazardous waste manifests were also examined for several waste shipments from the Kova Camp and were consistent with information contained in the waste register and also included confirmation of receipt of the waste in Izaydas.

The Central Waste Accumulation Area at Kova Camp appeared clean with good attention to labeling, waste containment and segregation. Mixed waste was not clearly labeled and appears to be listed in the hazardous waste register as “contaminated waste”.

The Central Waste Accumulation Area at Ilica Camp was significantly improved over the last visit. The HW was properly contained, and labeling was improved. There were no visible traces of spills. The area has been paved, bermed, fenced and provided with a gate. Mixed waste, however, was not clearly identified. Also there were additional wastes stored outside of the CWAA, including hazardous waste that should be removed and stored in the CWAA. Blasting grit with traces of oily spills was found on the ground.

The new CWAA for the Cardirkaya Camp was found to be well designed.

PLL (Lot C)

PLL has identified third-party recyclers for plastic, paper, wood, metal and glass wastes. Non-reusable / non-recyclable non-hazardous waste, hazardous waste and medical waste are collected and sent to the Izaydas waste management center. Organic wastes are treated at the composting facility built by PLL.

The CWAA at Andirin Camp was clean and well organized. Waste was sufficiently segregated and labeled. However, the collection drains for runoff were clogged and needed to be cleaned.

The CWAA at Orensehir Camp was under construction at the time of the visit.

TEKFEN (Ceyhan Marine Terminal – CMT)

The site was not visited during the June-July audit. As recommended during the March visit, an assessment of inert waste storage area near Narlık Village was carried out in March 2004, after the IEC visit. The site has been permitted for inert waste disposal Permit was received from the competent authority (Kurtkulaği Municipality). The assessment concluded that impacts from Project activities are not significant at the selected site.

4.4.2 Non-Hazardous and Hazardous Waste - Recommendations

1. The documentation contained in the waste registers appears to be adequate but there is some variability in organization of the information between contractors. BOTAŞ is recommended to provide some standardization of the waste registers so that volumes can be more readily obtained across all three Lots and the pump stations. The TEPE Pump Stations register appears to be the best organized and could be used as a standard across all facilities in Turkey.
2. Waste register accuracy should be verified in the field by BTC and BOTAŞ.
3. The CWAA at the Ilica Camp was markedly improved over the last visit but some wastes are still stored in areas outside of the facility. An area used for waste storage by the sewage treatment plant should be cleaned up and wastes should be moved to the CWAA.
4. Although the Izaydas waste centre is designed for receipt of both hazardous and municipal waste, it is recommended that an audit of the facility be done jointly by BOTAŞ and BTC to confirm chain of custody of waste shipments, the final disposition of all project wastes and that the waste water treatment facility is compliant with EU discharge standards.
5. BTC should consistently conduct an independent evaluation of the sites proposed and/or used by EPC Contractors, especially TEKFEN (Narlık site) and TEPE (e.g., PT3 and PT2), for disposal of inert waste (excess subsoil, surplus material, concrete waste, etc.). The review should include all the sites and should focus on compliance with Project commitments in terms of environmental protection, community relations, safety management (including transportation safety), landscaping and reinstatement, as needed and consistent with the concept discussed for aggregate management.

4.4.3 Wastewater Management - Observations

Wastewater management remains an issue of concern for both BTC and BOTAŞ although considerable improvements have been made towards compliance with EU discharge limits. At the time of the visit, compliance of the project WWTPs with Project standards was only being achieved at PT2 (not visited) and the Kova Camp (Lot B). The Project subsequently informed IEC that also Ilica and Koyunkaya WWTPs were compliant, but that the local Ministry of Environment representatives had not issued a permit yet. The other WWTP discharges were mainly trucked and disposed in municipal WWTPs. It is unclear if the receiving municipal WWTPs are meeting Project specifications. BTC was planning to undertake an additional audit of project Wastewater Treatment Plants (WWTPs) in Turkey in July 2004.

TEPE (IPT1, PT3 and PT4)

There are no plans to install a WWTP at IPT1 that is still under construction. Wastewater is currently directed to a septic tank that is pumped out and trucked to Kayseri municipal wastewater treatment plant for disposal, a distance of 200 km.

A WWTP is currently operational at PT4 but discharges while meeting Turkish standards are still not EU compliant, particularly for BOD/COD. Sewage is reportedly trucked to Kayseri for disposal in the municipal wastewater treatment plant. There is a concern that the size of the existing leach field may not be sufficient to the demand, particularly at peak work force. It was reported that the leach field was still not in use at the time of the visit.

A Biocell 750 WWTP has been installed at PT3 but was still not conforming to EU discharge criteria at the time of the visit. Treated sewage was being transferred to a holding tank prior to removal by vacuum truck each day. Sewage was being trucked to the Erzincan WWTP for disposal. A leach field is also being planned for the PT3 site.

TEPE-NACAP (Lot A)

At Köprükoy Camp wastewater is collected in two septic tanks of 40 cubic meter capacity total, and trucked to Erzincan municipal WWTP for disposal.

The WWTP at Kars Camp has been recently upgraded with additional three units. There are now in total 8 units, with a capacity of 2,000 people. Although it is reported that the WWTP discharge is still not meeting the EU standards, particularly for coliforms and TSS, it was reported that the new upgrade should meet EU standards, as soon as the three units are fully activated with sufficient bacteria growth. Because of the non-compliant conditions at the time of the visit, wastewater is discharged to the Kars municipal sewerage system, which does not have any treatment (*Level II Non-Compliance, CCP Pollution Prevention, Commitment ID: APC4E39*). Two vacuum trucks were available for contingency. At the time of the

visit, the Contractor reported that it was planning to truck the sewage produced in Köprükoy camp to Kars WWTP for treatment and disposal.

STA (Lot B)

The WWTP at Iliça Camp was operational at the time of the visit, although it was still not meeting the standards and therefore the wastewater was being stored and sent to the Erzincan municipal WWTP. Some improvement was noted since the March 2004 visit in terms of containment and fencing of the WWTP units and storage tanks.

Discharges of the WWTP at the Kova Camp (Biomass 700) are in compliance with EU standards. Effluent is currently discharged to the Ilgar River. Review of monitoring data for 22 June 2004 show COD limits of 25 mg/L, TSS of 16 mg/L and coliforms of 4.5 MPN/100 ml which are in compliance with Project specifications in Turkey.

Sewage at the Cardirkaya Camp is currently trucked to the Erzincan WWTP. A new WWTP (Biomass 700) is in operation, but awaits approval from the Ministry of Environment to operate an accompanying septic or infiltration tank. The tank is currently located outside of the camp boundary. In addition, the tank had a manhole cover open, creating a hazard for people and animals from surrounding agricultural land. The location of the new WWTP, and especially its primary screening unit, was found to be close to worker dormitories, which is a concern in terms of odor control and health protection.

PLL (Lot C)

There are two WWTP's in operation at the Andirin camp – a Biomak 500 and a Biomak 300. Sewage is currently being trucked to Adana municipal WWTP as discharges do not meet EU standards. Water samples are taken twice a week. Analysis of the wastewater data show the COD, BOD and TSS are within limits but that coliform levels have been problematic in the past, although new chlorine dosing equipment could achieve compliance.

The WWTP of Orensehir Camp was under construction at the time of the visit.

TEKFEN (CMT)

The facility was not visited in the June-July audit.

4.4.4 Wastewater Management – Recommendations

1. With the exception of the operating WWTP at the Kova Camp in Lot B, sewage from all other facilities visited is being trucked to municipal WWTPs. While this is still considered by the Project to be a “temporary” solution, it is not known whether these municipal facilities do in fact meet EU sewage discharge compliance standards. While a significant commitment and improvement to achieving WWTP discharge in compliance with EU standards is noted from the previous visit, all Project discharges should meet these standards as soon as possible. The upcoming WWTP audit should provide results and recommendations for achieving compliance. If municipal WWTPs need to be used for disposal, BOTAS and BTC should provide evidence that these plants are meeting Project standards.
2. There are some concerns about verification that septic waste is actually being received at municipal sewage treatment plants. A NCR was raised by the Project on 11 June 2004 in Lot A regarding the unauthorized discharge of a vacuum truck containing sewage waste into the Hasenkale River. No records were made available during the June-July visit regarding the receipt of sewage discharges at municipal WWTPs. BOTAS and BTC should provide evidence and ensure that the sewage is consistently trucked and disposed of at the municipal WWTPs.
3. Sizing requirements of septic fields used as a final discharge of WWTP effluent should take into consideration water usage and expected demand (e.g., PT4 STP leach field appears to be undersized to meet the demand). The EPC Contractors should undertake specific studies considering also wastewater sources and volumes, not only considering sizing based on camp occupancy.
4. Care must be taken to ensure that the sewage disposal points are located in a suitable area, and are consistent with human health and environmental risk prevention and minimization criteria. Selected areas should be properly fenced for safety purposes.
5. TEPE should ensure that wastewater and stormwater drainages at PT4 are not connected and that the two streams are separately handled and discharged.
6. BTC and BOTAS should continue to ensure that the wastewater treatment programs implemented by the EPC Contractors allow for an adequate compliance verification of Project commitments. The ongoing results of effluent monitoring should be validated, particularly as some discharges are now going to surface waters (i.e., PT2 and Kars). The quality of external laboratories should be verified by BTC/BOTAS to ensure that procedures and protocols for sample analysis and reporting meet EU standards.

7. It was recommended in the March visit that BOTAŞ and EPC Contractors consider installing field laboratories to allow for more frequent and controlled testing of basic wastewater process and effluent quality parameters. This recommendation was not fulfilled as of the June-July visit.

4.5 POLLUTION PREVENTION

4.5.1 Observations

As already described in Section 2.5, the Project has adopted a pollution prevention plan aimed at systematically identifying potential impacts from construction activities and implementing avoidance and mitigation measures to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. The mitigation measures include: spill prevention and management; management of existing contaminated sites; groundwater protection; surface water protection; ecological receptor protection; air quality protection and dust mitigation; noise control; soil erosion control and topsoil protection.

Various provisions apply directly to the protection of surface and ground waters, including permanent fuel and chemical storage, hazardous materials storage, vehicle maintenance facilities, wastewater discharges, run-off controls, and disposal of trench water and groundwater.

Maintenance of irrigation drainage and stream flow and erosion and sediment controls along the ROW construction are discussed in Section 4.6.

TEPE (PT3 and PT4)

PT3

Spot noise monitoring is undertaken every four days at seven locations at PT3 and a noise register is maintained. Reported noise levels are well within project standards for industrial work sites.

Vehicle emission testing was undertaken in October 2003 and April 2004 and generator emissions were measured in April 2004. An air emissions register is maintained.

The fuel storage area at PT3 is properly designed, with adequate spill containment in place. The site is adequately fitted with drains that lead to an oil water separator. Fire extinguishers and spill kits were available.

Fuel storage for the emergency generator and heating plant is adequately bermed and reportedly designed for 110% containment of the volume of the storage tanks.

A large concrete wastewater pit was noted at PT3 batch plant site. The pit is unlined. A report was made available on a suitable wastewater treatment method to reach the desired standards, including the use of this wastewater for dust control on roads (TEPE REP ENM PT3 008 – 11 June 2004). Although the report provided did not contain sample analysis results, it was reported by the Project that sampling has found that the wastewater has a high pH (11-12 range) and contains significant concentrations of heavy metals, particularly chromium. Available information was not sufficient to ensure that there is no impact from this wastewater stream (*Level II Non-Compliance, CCP Pollution Prevention, Commitment ID: CH12E20*).

A TEPE dump truck was observed being washed in a small stream outside of PT3. Vehicles should be washed in car wash facilities with proper oil water separation. (*Level I Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: APC4E34*).

In March, IEC found that the third-party facilities (aggregate sources and batch plants) used by TEPE to produce the significant amount of aggregate and concrete needed for the construction of four Pump Stations were not fully evaluated in terms of adherence to basic and applicable environmental and social commitments. An environmental assessment of one gravel source, the Birlik Quarry, was reviewed in conjunction with a Quarry Assessment Checklist (15 April 2004). The documents showed proper attention was paid to assessing the impacts of aggregate removal. However, an NCR for unauthorized gravel extraction was later issued on 20 April 2004. BOTAŞ and TEPE should continue to review aggregate extraction procedures and follow-up commitments arising out of the NCR, as discussed in Section 4.3.

PT4

Noise monitoring is undertaken at PT4 on an *ad hoc* basis. Up to May 2004 readings were taken once a month and two readings were taken in June 2004. Data from the noise register for 26 June 2004 exceeded project standards (70 dB industrial/commercial daytime) at the camp entrance, sleeping areas, WWTP, metal shop and at the construction site (up to 86.7 dB). (*Level I Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: APC1E77*).

The fuel storage area at PT4 had sufficient labeling and proper containment (reportedly, 110% of volume of the fuel storage tanks) in place. Adequate spill kits and fire extinguishers were present.

A concrete wastewater pit was noted at the batch plant site. The pit is significantly smaller than the one observed at PT3. It is unlined and was found almost empty, supposedly due to evaporation and infiltration.

In the car wash area, the oil water separator (OWS) under construction was noted to be too small for the expected volume of wash water.

TEPE-NACAP (Lot A)

The fuel storage area at the Kars Camp was clean and had proper containment. The fuel station platform is not bunded, although it is made of concrete. Spill kits were available on site. Drainage from the concrete pad goes to an oil water separator, which was found properly installed and maintained.

The fuel storage area at the Koprukhoy Camp was found not to be fully adequate. The fuel station platform is not bunded, although it is of concrete. No oil spill kit was present in the fueling area but was present in a storage room in the back. No oil water separator was available.

Spot checks are made on the ROW for noise and are within project standards. No noise records were made available for the camps.

No air quality monitoring has been done in Lot A, and only visual inspection of vehicle emissions has been made. Staff commented on the poor quality of diesel available that results in higher emissions, but no further specific information was made available.

Increased vehicle traffic throughout the project area is causing more dust coupled with dry weather. The Project is attempting to address the issue through watering of roads, but resources appear to be limited. A significant dust issue was noted in Lot A as a result of extensive use of a bypass route on an unpaved road (the Ardahan bypass) as a result of the collapse of the temporary bridge over Kura River on 1st July 2004. The bridge collapsed due to passage of heavy machinery of the EPC Contractor. The temporary bridge, installed by the Turkish Army after the collapse of the existing bridge during heavy rains in March 2004, was used by TPN vehicles, as well as TEPE vehicles involved in the construction of PT1. At the time of the visit, Project traffic, in addition to a significant traffic flow of public and private vehicles, passing between Turkey and Georgia, was using the Ardahan bypass. The bypass was being used as one of the main routes for traffic between Turkey and Georgia. Increased vehicle traffic (project and non-project) was observed to cause significant dust levels and creating a major public safety hazard. The IEC was subsequently informed that the main road was re-opened shortly after this mission.

STA (Lot B)

Noise monitoring is conducted in Lot B on a random and non-standardized basis. Staff indicated they have three noise meters and have ordered three more. Two noise level records were reviewed and, although specified, do not comply with project standards. One record showed a level of 86.4 dB during lowering (Project standards = 70 dB industrial daytime) (*Level I Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: APC1E77*).

The fuel storage area at the Kova Camp was adequate and properly maintained. Some staining was noted on the concrete surface of the fueling area and spill kits were available. The tanks are properly contained. The concrete platform of the refueling area is adequate and large, although not banded. There is a sump pit, from where runoff is collected.

The Project reported that, although not all of the vehicle emission checks were complete, they were partially complete at the time of auditing (Spread 1 complete and under preparation for Spread 2). Emission monitoring of the generators is also performed.

At the Karasu River (KP 411.5), a cement truck was observed to have dumped a limited amount of waste cement on the riverbank and there were indications that the vehicle was being washed in the river, as well as another waste cement dumping in the immediate vicinity (*Level I Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: APC4E37*).

At KP 726, refueling of a bulldozer was observed. The tank truck was observed to leak fuel on the ROW, but the limited amount of absorbent available was being used to absorb the leak.

PLL (Lot C)

Noise monitoring appears to be conducted at sensitive locations along the ROW. Documentation provided for specific locations appears to be appropriate. Short-term noise level violations related to specific operations along the ROW were reported to local communities.

An air emission monitoring program is being implemented for vehicle emissions control and generator emissions.

Insufficient absorbent was noted at the refueling station at the Andirin Camp and the sump was found to contain some garbage.

TEKFEN (CMT)

The site was not visited during June-July 2004.

4.5.2 Recommendations

1. Fuel storage facilities throughout all three Lots and the pump stations appear to have addressed concerns about containment raised during the March visit, and appear to be adequate. Some concerns exist about the adequacy of the OWS systems in terms of volumes at some locations (e.g., PT4). BTC and BOTAŞ should undertake an evaluation of OWS to ensure that they are adequately sized to account for rainfall events and, together with EPC Contractor, develop enhancement measures, as needed.
2. Noise monitoring still is not being performed consistently throughout the project with the exception of PT3. BOTAŞ and EPC contractors should ensure that noise monitoring is undertaken during construction in relation to sensitive receptors. Noise levels should also be assessed at construction sites to ensure that they are not a safety hazard.
3. Dust is a significant environmental and safety issue, particularly in Lot A in relation to the use of the Ardahan Bypass. Since a project vehicle was responsible for the collapse of the Kura Bridge and notwithstanding the ongoing investigation on collapse causes and responsibility, BTC and BOTAŞ should immediately coordinate and assume a lead role in developing a contingency plan to reduce dust levels and increase traffic safety on the Ardahan bypass.
4. The use of the concrete wash water for dust control at PT3, as well as at other Project facilities, should be carefully evaluated. Disposal options should be carefully evaluated by the Project to ensure that pollution prevention and impact minimization criteria are met. Chromium (and other heavy metals) levels in this wastewater stream should be assessed in light of project standards and if in compliance the water should be neutralized so as not to pose an environmental hazard. Throughout the Project, the use of unlined pits should not be allowed for the storage of potentially hazardous wastewater streams.
5. Vehicles should not be washed in rivers and waste cement should be disposed of in authorized locations. These are clear non-compliances with the Contractor Control Plan – Pollution Prevention *Commitment ID: APC34E34 and APC4E37*. EPC Contractors should inform all drivers of vehicles regarding these commitments. Monitoring and enforcement procedures should be strengthened by BOTAŞ and BTC, particularly at sensitive locations, such as work areas for concrete coating in the vicinity of river crossings.

4.6 ROW MANAGEMENT, EROSION CONTROL AND REINSTATEMENT

4.6.1 Observations

As observed previously in March 2004, the length of the ROW under construction in Turkey is extensive, creating potential impacts on environment and an actual strain on the BTC, BOTAŞ and the EPC contractor organizations, especially considering

the recovery plans currently in place. At the time of the June-July visit, there were more than 130 separate work fronts open in all the Lots (27 in Lot A, 54 in Lot B and 52 in Lot C). Only 18.5 km of the 1078 km ROW in Turkey were reported as reinstated at time of the visit. There were 101.9 km of open trench in all three Lots (27.8 km in Lot A, 60.5 km in Lot B and 13.6 km in Lot C).

BTC has provided one reinstatement specialist in each of the three Lots to provide technical assistance to BOTAŞ and the EPC contractors. BOTAŞ has one dedicated reinstatement specialist in Lot C and the Environmental Supervisor in Lot A has reinstatement experience. Similarly, the TPN environmental manager in Lot A has reinstatement experience, but there is a lack of reinstatement expertise at the BOTAŞ level in Lot B and at the EPC contractor level in Lots B and C.

Special Area Reinstatement Method Statements (SARMS) have been developed for the Ecological Sensitive Areas (ESAs) identified during the EIA phase. BTC has prepared and distributed a Reinstatement Guide for the ESAs aimed at complementing and updating the Vegetation Mapping Survey Report issued in January 2003.

ROW crews were found to be generally well organized. The ROW is properly maintained and cleaned up during construction activities, with waste properly collected daily.

Consistent and appropriate topsoil handling and storage practices were observed throughout all Lots. Topsoil has consistently been segregated, compacted and stored in proper manner. Animal crossings were found to be consistently present. Despite project delays, soil fertility appears to be maintained at the locations visited. Excellent topsoil handling and storage practices were observed particularly in Lot C at the visited locations of Areas of Important Plants (AIPs) identified for several ESAs.

Similarly, an adequate and sufficient use of temporary erosion control measures on steep slopes was noted throughout the project, although this is not consistent on all slopes. Good examples of implementation of temporary erosion control measures and silt fences were noted in steep slopes of ESA-1 (Posof) in Lot A.

The pipeline construction activities in the Karstic area at KP 613-614 (Lot B) were also visited. The active karst zone along the ROW is about 7 km, but there are about 70 km of karstic ROW. The IEC acknowledges the extensive assessment of geohazards and hydrogeological conditions performed by the Project since the EIA phase. A special method statement is also in place. Appropriate segregation and preservation of topsoil (from spoil rock, gypsum) with extensive use of geotextile were observed, including separation of different types of topsoil (from dolines and from ridges). Sink holes were found to be present next to the ROW, but they appear to be properly identified and protected. One issue of concern will be the adequate reinstatement of the ridges, and minimization of surplus material.

With respect to the previous visit, river crossing performance has improved in Lot C. At the time of the visit, nine out of 13 total crossings were completed. An excellent example of initial reinstatement at the Zamanti River crossing was observed. Good natural re-growth has occurred in the reinstated area, including sensitive orchid species. Gabions were installed to stabilize the river banks. However, the pipe was not strung over the entire wetland from road to road due to seasonal constraints. It may be necessary to go back and possibly re-disturb land, although the Project has committed not to go back in those areas that have been turfed/re-seeded.

At the same location, immediately south of the Zamanti River crossing, a side slope with no topsoil was observed to have been unnecessarily graded, with a large cut and spoil pile. Also due to some procedural gaps (reported to be the absence of soil sampling and analysis), a stop work order was issued by BTC. Because of the lack of topsoil, this slope will be difficult to reinstate. It is important to avoid similar situations for other slopes.

A contradictory environmental management issue was noted at the Posof River crossing in Lot A. Here pipeline construction has been halted due to a seasonal constraint for nesting birds until August 1. The Project reported that a subsequent ornithological survey found the absence of sensitive bird species responsible for the seasonal constraint. A report subsequently was submitted by the Contractor recommending that the seasonal constraint be lifted. Project approval had been given for concrete coating activities to commence within the seasonal constraint. In the same area, a gravel plant, operated by DSI, was in operation and was reported in the field to be a possible supplier of aggregate for construction of PT1. Subsequently, the Project specified that a quarry operated by DSI for PT1 is not mentioned in "TEPE Environmental and Social Assessment for Material Provision from the Quarries in the Vicinity of PT-1 (RTPE-REP-ENM-PT1-003). By the amount of disturbance noted in the riverbed, the gravel plant has been operational for some time and gravel extraction operations were continuing during the time of the seasonal constraint that had halted pipeline construction.

Good examples of wetland crossing were observed in all the Lots, particularly at KP 825 in Lot C and at ESA 25, KP 522+300 – 522+800 in Lot B. Good implementation of stream flow maintenance and wetland protection measures were observed including the use of flume pipes, silt fences and geotextile, and the placement of wood fences at the foot of side slopes to protect the wetland from sediment and subsoil contamination.

Small stream / channel / irrigation drainage flow is generally maintained through the use of flume pipes. As noted in the March visit, the implementation of such measures is consistent through the Lots visited, although inadequately sized flume pipes or their removal after backfilling continue to cause problems in Lot B. The removal of flume pipes after pipe installation and backfilling in the area of Balikli (Lot B) had caused farmers to open drainage ditches across the ROW to allow field irrigation. At the time of the visit, this had caused the ROW to become impassable to

traffic which had to go instead through the villages of Balikli and Yesil Yaka. Problems with flume pipes were also noted in Lot B along the ROW in the vicinity of the Aksu River where the length of flume pipe was insufficient and there was poor use of geotextile for silt control (*Level II Non-Compliance, CCP Reinstatement Plan, Commitment ID: S 631*).

The use of flume pipes to maintain irrigation drainage was found to be excellent at locations visited in Lot C.

Blasting on the ROW was only conducted in Lot C. Specific blasting procedures and permit forms have been developed and are consistently used. The information provided by the PLL Safety Inspector was found to be adequately organized and documented. Rock is currently placed on the ROW and no final disposal procedures have been developed at the present time.

Road crossings along the pipeline ROW appear to be managed within BTC Project commitments. However, signage on access roads to the ROW is not consistent across all three Lots. It appears to be especially weak in Lot B.

The fragmentation of construction activities on the ROW and the delays in reinstatement are a major concern resulting from the June-July visit. As reported above, only 18.5 km (less than 2%) of the total 1,083 of ROW in Turkey were reported as reinstated at the time of the visit. Of this 16 km was in Lot C and 2.5 km in Lot B. No reinstatement has begun in Lot A. To date, all three Lots are in non-compliance regarding contractor reinstatement commitments (*Level II CCP Reinstatement Turkey, Commitment ID: APC2E7*). Therefore, IEC is particularly concerned about the commitment to reinstatement and about what can be realistically and adequately achieved in the remaining time available in 2004, particularly in Lots A and B.

Based on the conditions found during the June-July visit, the IEC observes the following:

- There is an apparent lack of senior management commitment to the importance of the “back-end” construction activities. The Project in Turkey must give greater attention to coordinating reinstatement commitments with construction needs.
- A number of method statements have been in preparation for long time and this appears to be an important factor in causing delays and stop work conditions in difficult terrain, such as steep slopes and river crossings.
- There is a persistent and prolonged issue in terms of inadequacy of resources (both experience personnel and materials) and machinery dedicated to reinstatement.

- The Project is taking action only now to recruit adequate personnel - gaps still exist, especially at contractor level (particularly in Lot B).
- There is a persisting and unjustified uncertainty and controversy over reinstatement of the NGP line affecting progress in Lot B. NGP reinstatement is a precise Project commitment, clearly specified on Page 15 of the CCP Reinstatement Plan as follows: *“It is a BTC Project requirement that the BTC Pipeline will not inherit reputation and soil erosion problems caused by poor reinstatement of the NGP. In order to achieve this, a two-phased approach to reinstatement in the vicinity of the NGP will be adopted. The first phase will involve the NGP construction contractor undertaking remedial reinstatement measures prior to BTC construction to resolve existing problems related to poor reinstatement of the NGP. The second phase will require the BTC Project construction contractor to undertake any additional mitigation measures necessary to ensure the integrity of the BTC corridor in areas impacted, or potentially impacted, by the presence and/or proximity of the NGP Pipeline. This second phase will require the BTC construction contractor to implement reinstatement measures across the two parallel (i.e., NGP and BTC) corridors in areas as defined in this Section (e.g., hill slopes, river crossings, etc.”* Delays in the reinstatement of the NGP ROW are not in compliance with ESAP commitments (*Level II CCP Reinstatement Turkey, Commitment ID: CH15E5, APC2E15, APC2E16, APC2E17, APC2E18*).

Where implemented, especially in Lot C, reinstatement activities appear to be satisfactory. Good practices were observed at KP 1009 in a sloping terrain, with implementation of terraces, subsurface drainage, jute matting, and the presence of rip rap along the stream bank. Some natural revegetation and agricultural activity were occurring along the reinstated ROW. Reinstatement work is reportedly almost finished in the Azizli section from the CMT to KP 1003 and a punch list has been prepared by the BOTAS reinstatement specialist. In the Andirin section from KP 1010 to 879, where temporary erosion measures (mostly slope breakers) have been implemented, the EPC Contractor had started reinstatement at the time of the visit. In the Yesilkent section from KP 879 to beginning of Lot B, where construction activities were mostly active during the visit, there is a plan to reinstate the ROW immediately after backfilling. During a meeting with IEC, PLL management stated that they will finish with clearing/grading activities by early July and they will devote those resources and equipment to the backend activities.

Biorestitution plans were being drafted by the EPC Contractors at the time of the visit. BTC has organized a workshop to be held in mid-July where reinstatement and biorestitution issues will be discussed among different Project specialists of BTC, BOTAS, and EPC Contractor.

Also due to the extensive length of open ROW, third party access to the ROW remains a significant public safety issue throughout all Lots in Turkey. In Lot C, a

group of “nomadic” campers were noted in the vicinity of the Andirin Camp, within and adjacent to the ROW. In Lot B, farmers were noted along the ROW at coating operations (KP 434), where a safety inspector was not present.

The amount of open trench in the project is a critical non-compliance situation and major safety concern to the Project that implies a reasonable expectation of impending material damages. The Community Safety Plan clearly identifies these potential impacts to adjacent receptors and concerns over community safety *“There is a risk of injury to community members, especially children during the construction of the pipeline in or near settlements. Hazards include the open trench, which will be at least 2.5 m deep and potentially much deeper in places such as river crossings over tracks, roads, etc. Other hazards include road traffic, heavy machinery, use of explosives and dangerous wastes”* (Page 12).

Impacts to livestock are also identified: *“There is the potential for injury or disruption to livestock due to the presence of an open trench, which presents a fall hazard as well as preventing stock movements from one side of the right-of-way to another”* (Page 12).

Furthermore, the Community Safety Plan identifies specific mitigation measures to counter the impacts of trench hazards (Page 15): *“During construction, appropriate measures will be undertaken to ensure the safety of people (and livestock ...) from sustaining injury from the presence of the open trench within the right-of-way. Appropriate measures will include providing and maintaining safe diversions, temporary bridges, barricades, signs and warning lights as necessary. The length of trench open at any one time will not exceed 20km or 40 days construction time. Temporary barrier fencing must be erected (sufficient to impede young children) on sections of the pipeline that come within 500m of residential areas and in areas where the trench is deeper than 2.0m. The contractor must ensure safe access to land by providing pedestrian (and livestock ...) crossings at locations agreed with community members”*.

As indicated above, there were 101.9 km of open trench in all three Lots at the time of the visit (27.8 km in Lot A, 60.5 km in Lot B and 13.6 km in Lot C). This is not only a significant safety concern for workers and local communities, but the length of open trench is non-compliant in Lot A and Lot B where project commitments limit the length of open trench to 20 km or 40 days construction time (*Level III Non-Compliance, Community Safety Plan Turkey, Commitment ID: AP C8 S74, AP C8 S94*). This Level III non-compliance is assigned to BTC because this was consistently observed throughout the Project and this is a critical and known disregard of ESAP commitments.

4.6.2 Recommendations

1. IEC has significant concerns about the lack of reinstatement of the ROW in Turkey relative to construction progress. To date, less than 2% of the project RoW has been reinstated, which is clearly inadequate. To this end, it is stressed that:
 - BOTAS/BTC are urged to resolve any outstanding responsibilities towards reinstatement of the NGP, consistent with Project commitments. A final agreement should be reached between BTC and BOTAŞ regarding the responsibility, resources, equipment and personnel required to restore the NGP ROW where it is parallel to the pipeline.
 - Project management and Contractor commitment to the importance of reinstatement is to be reinforced.
 - The establishment of a dedicated reinstatement team is to be prioritized by all the Contractors.
 - Practical reinstatement planning consistent across all three Lots is to be developed, including realistic schedules and commitment of manpower and resources to do the job.
2. The EPC Contractors need to immediately dedicate sufficient resources to implement and comply with the ESAP commitments for reinstatement.
3. BTC should consider developing specific punch lists for each Lot to identify erosion-prone zones and ecologically sensitive sections to be monitored in terms of effectiveness of temporary erosion control, and/or reinstated as soon as practical and to be closely monitored by the Project.
4. The length of open trench is a significant concern and classified by the IEC as a Level III non-compliance. BTC and BOTAŞ should coordinate and ensure that commitments regarding the length of open trench be respected. Furthermore commitments of the ESAP (Community Safety Plan Turkey Commitment ID: APC8S74) regarding public safety should be adhered to - *Demarcate open trenches with luminous temporary fencing. Erect stock proof fencing in areas of danger for livestock. Agree to areas for fencing with relevant settlements and livestock owners in advance. Erect protective barrier fencing (sufficient to impede young children) on sections that come within 500 metres of residential areas, major river or road crossings, and in areas where the trench is deeper than 2 metres. Fence all crossing points over open trench, secure heavy machinery at agreed locations over night..... Prior to construction, provide safety briefings during all scheduled community meetings along the route.* The Project should develop an Access Management Control Plan for third party access along the ROW and ensure that the Community Relations and H&S

- Departments of EPC contractors are adequately staffed and equipped, and actively engaged in third party monitoring and community education programs about construction dangers on the ROW.
5. Proper planning must be coordinated with time constraints at river crossings, to limit “stop and go” approach. Future stream crossings should be completed according to project commitments and with adequate materials available (e.g. concrete coating) at the onset of the construction activities.
 6. The lack of an adequate supply and inconsistent use of flume pipes continues to be noted on the ROW in Lot B and causes inconveniences and impacts to local landowners. BOTAŞ and BTC should ensure that all EPC Contractors have sufficient flume pipes available and that construction staff are trained in their use and proper deployment..
 7. EPC Contractors need to implement sufficient and consistent temporary erosion control measures on all steep slopes, in light of the reinstatement delay.
 8. BOTAŞ and BTC should assess and resolve any potential inconsistencies in regard to Project activities conducted by different Contractors in relation to seasonal/timing constraints placed on pipeline construction. In this view, BOTAŞ and BTC should also investigate and clarify the reported supplying of aggregate for TP1 from a DSI-operated extraction site at the Posof River crossing, where Lot A pipeline construction was halted in compliance with seasonal constraints.
 9. The Project needs to address the issues of unauthorized access of third parties to the ROW throughout all Lots in Turkey. BTC, BOTAŞ and the EPC contractor's through their respective Community Relations and H&S departments should develop an Access Control Management Procedure which shall provide sufficient means for the Community Relations and H&S departments to increase their monitoring effectiveness along the ROW and shall strengthen education programs in schools and communities to inform people about the dangers of construction activities on the ROW. Safety inspectors should be adequate in terms of mobility, training and number, to actively inform and remove third parties from the ROW in the vicinity of active work sites.

4.7 ECOLOGICAL MANAGEMENT

4.7.1 Observations

A total of 55 Ecologically Sensitive Areas (ESAs) have been identified in Turkey from the EIA studies. ESAs were identified in two phases, which included a habitat survey in the 500 meter corridor. There are 12 ESAs in Lot A, 24 ESAs in Lot B and 19 ESAs in Lot C. As part of the pre-construction survey, detailed vegetation mapping studies were undertaken in the 28-meter ROW. Based on these additional

detailed studies, Special Area Reinstatement Method Statements (SARMS) were developed by BOTAS and the EPC Contractors for each ESA, and Areas of Important Plants (AIPs) were identified.

A number of ESAs were visited along the ROW in Lots A, B and C during the June-July visit. A general observation is that there has been a good implementation of protection measures along the ROW in all the Lots. Despite the persisting delays in reinstating the ROW in the several ESAs where construction activities have been already initiated, BOTAS and the EPC Contractors were consistently found to put a significant effort in protecting topsoil, stream crossings and ecological resources. The following specific observations were also noted:

- A positive finding is that a “Handbook of Threatened and Endemic Plant Species of BTC Pipeline, Turkey Section” was recently printed by BTC and distributed among parties. The aim of this publication is to provide consistent guidance to the Contractors on implementation of the ecological commitments at the ESAs.
- Topsoil was well stored and segregated at ESA 46 (Lot C) and there was good deployment of temporary erosion control measures. However spoil cast from ROW stripping is affecting the ESA.
- As already mentioned, at ESA 36 (Zamanti River) in Lot C, good reinstatement of the restored portion of the ROW was noted, but this will be disturbed once again when the river crossing will be re-completed, although the Project has committed not to go back in those areas that have been turfed/re-seeded.
- STA (Lot B) has reduced the ROW from 28 meters to 22 meters in the AIPs of the ESAs to minimize impact and is consistently implementing an important plant translocation program. They plan on keeping a 6 m corridor untouched by construction. For instance, at ESA 34 approximately 2,300 target plants have been translocated in the AIP which is 1.9 km in length. The EPC Contractor has three translocation crews consisting of approximately 30 people total. They report approximately 70% success rate for the translocated plants, which are periodically irrigated and monitored after translocation. A successful plant relocation was also noted at ESA 25 and a reroute will be done to avoid a sensitive wetland area.
- ESA 51 (Lot B) was completely reinstated in October 2003, with final seeding to be completed in September 2004. The ROW is located in an alluvial bed, with coarse material and pebbles and no topsoil. No plant translocation was done, but the Contractor did some seed collection and seeding. The reinstated corridor appears to have coarser material on the surface than the surrounding relatively undisturbed area. It was reported that the Contractor has agreed to do some manual collection of larger pebbles and to use finer material from the parallel road construction.

- The Hasenkale River crossing (ESA 11) was delayed and a seasonal constraint on this river between April and July was upheld. However, the Project also reported a shortage of concrete coating; 40 more pipe joints need to be coated.
- As already indicated, extensive use of temporary erosion control measures and silt fences were noted in the Posof Wildlife Preservation Area (ESA 1). These measures appear to be effective to control sedimentation and erosion in this important sensitive area.

During the mission ESA 13 (length of 1.37 km in the Erzurum Plain) in Lot B was visited. At ESA 13, construction was halted at the beginning of January 2004 and a seasonal constraint currently is in place until August 2004, at which time construction can be re-initiated. The situation at ESA 13 remains unchanged from the time of the March visit, where a number of construction issues were noted.

In the March 2004 report, IEC recommended that the Project adequately monitor, assess and document the potential environmental effects relevant to inadequate management of construction work at ESA 13 to ensure they are short-term and reversible. In addition, it was recommended that a revised SARMS and a revised Work Method Statement be developed for ESA 13 as soon as practical, including a recovery plan to address potential impacts of the present situation. Constraints should include seasonal conditions and limits on the duration of activities from clearing to reinstatement. The Project has continued to work on revisions of the SARMS and Construction Method Statement for ESA 13 after the March visit. Based on information collected and observations made during the site visits, it is apparent that the ESA 13 is a relatively disturbed site subject to grazing and changes in natural drainage due to presence of a major road. In addition, the NGP line has already affected the selected ROW corridor.

The ROW surface has been already disturbed by the BTC pipeline construction, and topsoil has been stockpiled in an appropriate fashion. BTC and BOTAŞ have reported that a limited number of recent soil samples appear to indicate no loss of topsoil fertility. IEC recommends that an integrated approach be taken to construction at ESA 13 considering the entire 1.3 km length of ROW as a single project, including the road crossing. Issues associated with reinstatement of the NGP in ESA 13 should also be resolved at the same time by BTC and BOTAŞ.

Taking into consideration that at the time of the visit the SARMS and the WMS for ESA 13 were still under revision, these documents should be finalized considering the following:

- Include procedures for cutting of the pipe, removal, welding and concrete coating
- Include procedures to delineate and deal with the high water table – e.g. test pits
- Include drainage procedures to remove standing water, if any

- Clarify use of bog mats as per WMS
- Finalize procedures for the road crossing
- Finalize tie-in procedures
- Finalize procedures for dual reinstatement of the Project pipeline and the NGP.

BOTAŞ, BTC and STA should also finalize appropriate construction and environmental mitigation procedures for ESA 13 as follows:

- A revised project schedule should be completed in a backward manner with completion (full reinstatement) no later than mid-October 2004.
- Equipment needs should be precisely determined.
- A mobilization plan should be completed considering availability of equipment.
- Responsibilities of STA, BOTAŞ and BTC should be clearly identified in the procedures, particularly in order to collect all the data needed to support the assessment that the current conditions and future construction activities do not impact the environmentally sensitive area.
- Monitoring programs should be implemented during and after construction.

BTC provided IEC a copy of a revised construction schedule for ESA 13 (STA-WMS-CON-PLB-270 Rev.1 – no date). The schedule begins July 15, 2004 with an ornithological survey and concludes with cleanup and reinstatement by September 30, 2004.

The March 2004 report highlighted that the CCP Ecological Management Plan recommends that special measures to minimize potential adverse effects on species of ecological interest are to be formalized into working method statements, including the Special Area Reinstatement Method Statements, applicable to ESAs, 60 days prior to construction commencing. Although some actions have been taken (i.e., strengthening the reinstatement expertise of field staff, through the appointments of experienced ecological advisors by BTC), the non-compliances opened in March cannot be still considered properly addressed by the Project (*Level II Non-Compliance, CCP Ecological Management Plan, Commitments ID: CH6E40, APC1E103*). It is noted that BTC has committed to formalize protection measures into working method statements, including the Special Area Reinstatement Method Statements, 60 days prior to the commencement of construction.. This is still not the case, since significant delays occur to finalize these documents. Also, BTC has committed to avoid wherever practicable, or minimize, potential impacts associated with activities that might disturb sensitive species, through the careful management

of construction activities/personnel and appropriate work scheduling. This still does not occur in a timely manner.

4.7.2 Recommendations

1. The Project should endeavor to complete construction in ESA 13 as soon as possible with a planned termination date by mid-October 2004. Issues of reinstatement of the NGP within ESA 13 should also be concluded with reinstatement of project pipeline construction activities.
2. BTC, BOTAŞ and STA should revisit the amended SARMS and Work Method Statement for ESA 13 as soon as practical, assuming to re-initiate the construction activities at the end of the seasonal constraint. All parties should ensure a clear understanding of responsibilities and commitment of the needed manpower, equipment and resources to complete the job as a single project. A monitoring program should be developed before, during and after construction at ESA 13 to ensure that there are no negative impacts arising from project construction. The SARMS and Work Method Statement should also include measures to reinstate the NGP within ESA 13.
3. SARMS for ESAs should be carefully revised considering the recovery plan in each Lot and the delays in implementing reinstatement.
4. As recommended in the March report, BTC and BOTAŞ should continue to focus on implementation of commitments in the ESAs and systematically monitor and ensure that the spirit of the EIA studies is fully applied in these areas, as well as in other sensitive locations (e.g., river crossings). IEC also again recommends the development of a specific Turkey monitoring plan for ESAs. BTC and BOTAŞ should consider strengthening their respective field staff with additional experienced environmental and ecological specialists to monitor ecological commitment implementation (i.e., special topsoil management, plant translocation, seed collection, etc.), also taking into account the current delays in reinstatement activities and the need to have adequate resources to meet the Project commitments for biorestitution.

4.8 CULTURAL HERITAGE MANAGEMENT

Cultural heritage management is predominantly the responsibility of BOTAŞ. The governing procedures are defined in the ESAP, Appendix E as a *Procedure, Cultural Heritage Management Plan*. This document provides the basic procedures for all phases of the cultural heritage management process, including archaeological late finds protocols. The construction contractors also have responsibilities for archaeological monitoring during pre-construction survey work and have developed their own *Cultural Heritage Management Procedures*. BOTAŞ has its own archaeological staff, but field work has been placed primarily with the Archaeological Environment Properties Research Centre at Gazi University. All

excavations are managed by the Archaeological Work Teams in association with the Ministry of Culture and Tourism, Directorate of Monuments and Museums (Museums Directorate), who has legal responsibility for excavation.

BTC has assumed a position of quality assurance with respect to archaeology. BTC is assisted by the British Institute of Archaeology at Ankara (BIAA) a UK based charitable NGO for assessments of field activities. The services of Oxford Archaeology, the largest independent archaeological practice in the U.K., have also been contracted for additional review services.

Prior to construction, the ROW was surveyed following Phase I and II procedures and 179 potentially significant archaeological sites were identified within a 2-km corridor. After pipeline reroutes approximately 12 were selected for Phase III excavations.

Current cultural heritage activities have related to the management of late finds. Field archaeologists actively monitor topsoil stripping and excavation work. When late finds are encountered, topsoil stripping/excavation must be stopped until the representative Museum Directorate evaluates the significance of the find. BOTAŞ has tabulated fourteen of these significant late finds where seven reroutes have already been implemented and four are being evaluated.

4.8.1 Observations

During the June-July mission two archaeological sites were visited (Roman Bath at KP 945 and late Roman site at KP 681). The following observations are made:

- Salvage excavations have been successfully concluded at the Roman Bath site (Lot C). A reroute of the pipeline is planned to avoid damage to the site and additional surveys of the new ROW have indicated no archaeological finds. BOTAŞ is awaiting final approval from the Protection Board to backfill the site in order to protect it from vandalism and further disturbance.
- A late Roman site was found at KP 681 (Ziyaret Siyu) in Lot B and was undergoing salvage excavation at the time of the June-July visit. The excavation is being conducted by Gazi University. The excavation was planned for conclusion by July 17, 2004. Following a decision of the Protection Board, BTC and BOTAŞ will coordinate to define the most appropriate course of actions to comply with Project commitments in terms of cultural heritage management.

There was a minor archaeological reroute decided next to a castle at KP 944 in Lot C. Despite the rocky terrain, the Project has committed not to do any blasting due to a requirement of the Ministry of Culture department to avoid it. A PLL archaeologist was on site.

Chance finds appear to be well managed and salvage excavations appear to be properly conducted throughout Turkey. An issue is the coordination with the Protection Boards of the Ministry of Culture. This appears to cause delays, particularly in the case of sites to be preserved after excavation (backfilling to avoid deterioration and vandalism). As pointed out in the March 2004 visit report, an observation from the Yuceoron site, one of the “late” finds in Lot C, where ROW has been rerouted, was that the excavated rockcut tombs are beginning to deteriorate due to exposure to the atmosphere and to vandalism. At the time of the visit in July, no action to protect the site has been implemented, and a final decision from the relevant Protection Board was still awaited.

A document on “Recommended Practice for Protection Cultural Heritage of Tasmasor Archaeological Site”, dated 5 April 2004, was provided by BTC. The document was reviewed by IEC and found to be acceptable, addressing the concerns on site mitigation discussed in the March 2004 mission, although the geophysical surveying appear to be not fully adequate. The IEC plans to review the geophysical results and how the data were processed.

4.8.2 Recommendations

1. The Project should ensure efforts are made to improve the coordination with Protection Boards of the Ministry of Culture and acquire permission to backfill the Roman Bath site, as well as the Yuceoron site, in order to preserve it from deterioration and vandalism.
2. All parties should continue to ensure that appropriate and timely communications are provided by BOTAŞ to BTC after any decision given by the Protection Boards
3. The Recommended Practice for Protection Cultural Heritage of the Tasmasor Archaeological Site indicated that the geophysical surveying should extend beyond the ROW. This is necessary to have context at the edge of the ROW and the survey should therefore be extended at least 10 meters from the ROW. The original geophysical program calls for a magnetometer survey only. The IEC recommends that the specification should state that a magnetic gradiometer survey be conducted at an appropriate line spacing with an appropriately specified distance between readings, preferably with a Cesium gradiometer where both gradient and total field can be recorded. The work scope should also include soil resistance survey.

4.9 COMMUNITY LIAISON

Community Liaison Management and community relations processes are responsible for communicating BTC Project information to the general public and communities along the pipeline route, as well as receive and transmit community information to the BTC Project. The overall objective for the community liaison and community

relations teams is to build a positive, non-dependent relationship between the Project and local communities. Specific responsibilities for community liaison include, but are not limited to:

- Providing communities affected by the Project with regular information on the progress of work and the implications for these communities.
- Informing the BTC Project of any community related issues that may impact on construction.
- Monitoring implementation of mitigation measures and the impact of construction via direct monitoring and feedback.
- Resolving grievances and managing disputes between the BTC Project and communities.
- Assisting with the implementation of community safety, health and investment programs.
- Conducting community training programs in important issues such as transportation safety.
- Recruiting workers from affected communities.

4.9.1 Observations

Community liaison is undertaken by a team of Community Relations (CR) specialists from BOTAS and the EPC contractors. BOTAS provides one Lead Community Relations Supervisor (CRS) per Lot and the pump stations, and one CR specialist per spread who work closely with Contractor CR specialists. BTC complies with its assurance role, providing two LTO officers per Lot that cooperate with BOTAS and Contractor staff on both environmental and social issues.

The following comments relate to the specific areas and Contractors visited.

PT3 and PT4 (TEPE): The TEPE Community Liaison Manager is supported by five Community Liaison Officers for the five TEPE stations. The TEPE CR personnel are well organized and dedicated. TEPE has made a significant effort to go beyond the five km radius in terms of community affairs identified in the EIA, especially at PT3. A good community outreach effort has been achieved and few open complaints are in place. There have been approximately 90 complaints in total for the pump stations since the project began; 19 complaints were open as of June 2004. 10 out of the 19 open complaints are reportedly not resolved within 30 days. Transportation safety has been a major outreach activity of TEPE CR staff; traffic safety meetings will be implemented in 21 villages and 2 districts. Driver training is also being

implemented. Dust complaints are being addressed by watering roads in nearby villages on a regular basis. Local residents have been contracted to water roads in two villages. TEPE has been meeting their KPI's in regard to employment at the district, provincial and national level, although some difficulties in recruitment at local community level were reported, since local workers prefer to work in their villages in the summer months rather than accept a pipeline job of limited duration. TEPE CR staff do not have dedicated vehicles, which is a concern in terms of mobility limitations, especially taking into consideration the reported concerns along main transportation roads for PT3 and the current critical situation at the Ardahan bypass (PT1), after the collapse of the temporary bridge over the Kura River.

Lot A (TEPE-NACAP): The Community Liaison Department in Lot A consists of a Manager and one CLO, Landowner Notification Officer and Clerk for each of Spread 1 and Mini-Spread, Spread 2 and Spread 3. They have a total of three vehicles at present which is not deemed sufficient. There have been a total of 176 complaints in Lot A of which 20 complaints are open over 30 days. Most of the complaints have come in the last two months and are associated with the increase in construction activity. Although each complaint is to be investigated to assess its validity, the majority of complaints relate to compensation for use of land outside of the ROW (unplanned land acquisition) and damage to land and crops resulting from construction. CR staff indicate in their reports that the large number of open complaints are due to lack of sufficient support from Construction and Financial Management staff to resolve payment in a timely manner.

Transportation safety is a major issue of concern in Lot A, but staff report that only 10% of community safety meetings have been completed due to a shortage of Community Liaison officers and lack of financial resources. Dust has also been cited as a complaint, although it was reported that TPN have nine water trucks spraying roads throughout Lot A. As mentioned previously, the collapse of the Kura River Bridge has increased dust levels significantly on the Ardahan bypass which poses both a public safety and environmental hazard. The IEC was subsequently informed that the main road was re-opened shortly after this mission.

TPN is meeting their employment KPI's for unskilled and skilled labor but are below the KPI for semi-skilled labor.

Lot B (STA): The STA Community Liaison Manager is assisted by two CLO's in Spread 1 and three CLO's in Spread 2. BOTAŞ has two dedicated CR specialists in Lot B. Each spread has access to two vehicles; BOTAŞ CR staff have one other vehicle. There have been a total of 241 complaints in Lot B of which 30 remain open as of June 2004. Most of the complaints relate to payment for damages (37%). BOTAŞ has a toll free telephone number for complaints but STA does not. Delays in payment to landowners, workers and subcontractors have been cited in the past in Lot B. CR staff indicated that there is a fast track effort to pay suppliers and that STA is paying salaries on behalf of subcontractors, as needed. However, CR staff

reported a slow reaction from construction staff to address complaints from landowners and that compensation payments were delayed.

As of June 2004, STA is meeting its KPIs for employment for unskilled and skilled workers but have not met the requirements for semi-skilled workers both at the local (36% vs. 60% KPI) and provincial levels (36.2% vs. 80% KPI).

Project vehicles were observed on likely unauthorized secondary roads and through a village throughout Lot B between ESA 20 (KP 452) and KP 450. IEC observed a good effort to hold traffic safety meetings at both the community and school level.

Although it was stated by BOTAŞ management that pipe transportation convoys are not allowed or in use, IEC observed convoys of up to six to eight trucks transporting with three pipes each. It is unknown if the convoys observed are to be considered “informal” convoys. Conflicting information was provided on this issue to IEC, taking into consideration that Project personnel reported that an escort vehicle for the convoys is generally provided. This was not the case for the convoys encountered during the site visit.

The deployment of flagmen in some villages observed to be crossed by Project heavy traffic was noted.

Lot C (PLL): PLL has one CL Manager and 4 Community Liaison Officers and each have their own vehicle. BOTAŞ has 2 Community Liaison Officers for Lot C. There have been a total of 144 complaints in Lot C and only seven remain open. A BOTAŞ free telephone number is available for complaints. The CR personnel in Lot C have an active process of consultation. A total of 525 meetings have been held in 118 villages. The topic of these meetings is wide ranging dealing with issues such as construction information (121), traffic awareness and safety (133), traffic awareness in schools (17), regular community meetings (83) and women’s issues (22). The CR personnel in Lot C are well organized and produced documentation on request such as the complaints register and meetings records. PLL continues to implement procedures for market surveillance that demonstrate an effort to comply with BTC Project commitments for procurement and use of local supplies. However, documentation of the implementation phase was not provided, so no conclusions can be made as to whether these commitments are being met.

IEC visited some community investments done by PLL in terms of building rehabilitation and improvement (community hall, hospital, house for school teachers) in Karakuyu. All the buildings will be used by the PLL workers, but later will be returned to the community.

4.9.2 Recommendations

1. Evidence was presented that the number of CR complaints have increased in Lots A and B as a result of increased construction activities. BTC, BOTAŞ and the EPC contractors should review their CR staffing resources to ensure that sufficient personnel are available to deal with these complaints that can be expected to increase in future. EPC contractors should also ensure that CR personnel also have sufficient vehicles available to ensure their mobility in the field.
2. Concerns were raised in both Lot A and B about the delays in payments to landowners. BOTAŞ and the EPC contractors should work together to ensure that there is good cooperation between the Construction/Financial and CR staffs to facilitate prompt payment of all valid landowner complaints.
3. CR personnel should conduct follow-up reviews of compensation payments as indicated in ESAP commitments. This was not done consistently throughout the project.
4. Transportation safety is a major concern as there are a large number of project vehicles passing through local villages. CR personnel should ensure that sufficient resources are dedicated to community awareness of transportation issues. H&S staff should also be involved in transportation safety meetings in communities.
5. It is recommended that TEPE and EPC Contractors for pipeline construction coordinate and develop a common strategy to control heavy traffic, particularly at village crossings, ensuring that convoys (either formal or informal) and heavy vehicles are managed and controlled through a coordinated use of escort vehicles and safety measures, with the aim at minimizing impacts on local communities.
6. There is a significant concern about unauthorized third party access to the ROW. CR personnel should ensure that there are ongoing training and awareness programs of the danger of construction activities on the ROW both at the community level and on the ROW itself.
7. In March 2004, it was recommended that accurate procurement and local supply statistics need to be developed for the project. The statistics of total expenditures provided in the BTC Monthly Report is difficult to relate to performance. Data reviewed during the June-July visit still was not adequate to gain a comprehensive understanding of local procurement for the different Project affected areas. BTC should assess the needs in terms of data collection and evaluation and promote consistent actions in this respect, consistent with Project commitments.

8. It is recommended that community investments, such as building rehabilitations and improvements as conducted by EPC Contractors, are reviewed by BTC and BOTAŞ to a set project quality and safety standard, before returning them to the community.

4.10 HEALTH AND SAFETY

4.10.1 Observations

Consistent with other aspects described in this chapter dedicated to Turkey, the main IEC observations with regard to health and safety is that, in spite of a sufficiently defined safety management system, the appropriate implementation in the field remains limited and in few cases inadequate. Concerns relate both to the adequacy of training for safety officers and their effectiveness in the field (in terms of adequate number and mobility) in implementing safety procedures.

BTC

BTC H&S organization includes one H&S advisor per each Lot and one H&S advisor devoted to each of the four Pump Stations.

BOTAŞ

The H&S Management Organization is now almost fully in place. Based on organizational charts provided by BOTAŞ, five H&S specialists form the Ankara Management Team supplemented in the field by a Lead H&S Engineer in each Lot and supporting H&S personnel (4 – Lot A, 7 – Lot B, 5 – Lot C). A Lead H&S Engineer and four H&S personnel are responsible for the CMT and one H&S Engineer is situated at PT1, PT2, PT3, PT4 and IPT1. An H&S expert is responsible for the Iskenderun Stockyard. One additional H&S Expert remains to be hired.

PT3 and PT4

At PT3, the number of safety inspectors for the site was observed to be low. At PT3 there are only 6 inspectors on site for more than 400 workers, although two new safety inspectors will be added shortly.. In addition to the number of inspectors, IEC is concerned about the level of training of TEPE safety inspectors. TEPE H&S staff lack experience and rely heavily on BTC and BOTAŞ oversight.

In light of the accelerated work schedule TEPE should specifically consider hiring an experienced H&S supervisor. TEPE safety audits are done every 6 months and BOTAŞ does a safety audit every quarter.

Good use of PPE was noted at both PT3 and PT4. Fire extinguishers were available at proper locations and were full although they did not all have inspection labels.

Lot A

There are 2 H&S engineers, 26 H&S inspectors and 15 medical staff. 12 out of the 26 H&S inspectors are junior staff with limited H&S training. Only a few inspectors have advanced first aid training. Mobility is a major issue for safety inspectors in Lot A. There are currently 5 vehicles available for H&S inspectors to mobilize to 27 active work fronts. H&S personnel reported that a lack of vehicles was affecting mobility to the field; many times staff double up with other personnel.

BOTAŞ has two H&S expatriates and 2 H&S engineers. BTC has one H&S assurance officer present.

Good use of PPE along the ROW was consistently observed.

Food delivery to a welding crew was observed to be handled without the use of dedicated and sealed containers.

Lot B

There were a number of systemic issues noted in the June-July visit in regard to H&S management in Lot B. There has been a significant turnover in H&S staff in Lot B. Since May 2004, there is a new STA H&S Supervisor. There are a total of 37 safety inspectors for a total workforce of approximately 2,200 personnel and for more than 50 work sites in Lot B. Many inspectors do not have a safety background and are given a training course prior to going to the field. A concern was raised that the duration of the training course is being reduced from two weeks to three days to accelerate the mobilization of the safety inspectors in the field. It was also reported that none of the safety inspectors are trained in advanced first aid and a paramedic is necessary in the event of an injury.

Two doctors and four paramedics are present in each of the three work camps.

Concerns have been raised in the past about the availability of PPE for workers in Lot B. However, PPE use did appear to be adequate during the site visit.

First aid kits were noted not to be available at all work locations on the ROW in Lot B. In addition, the contents of the first aid kits were found to be variable and needs to be standardized.

Many H&S personnel of the EPC Contractor are new to their positions and are stretched in terms of resources, catching up on previous deficiencies and keeping up with the pace of construction progress.

Although it was reported that field delivery of food has improved since March 2004 visit to Lot B, IEC observed that cold food is brought by each pipeline construction worker on site from the camp canteen in the morning. Hot food was not served at the

time of the visit. Complaints were raised by the workers on both quantity and quality of food on the ROW.

Lot C

PLL has 35 safety inspectors in Lot C spread out over 52 work fronts and 370 km of ROW. PLL safety inspectors lack vehicles and mobility in the field. BOTAŞ has one Lead HS Engineer, a HS Engineer and HS Expert in Lot C. BTC has one HS assurance officer on site. Issues were raised about transportation safety and the large number of kilometers being logged by project personnel. Five third party fatalities have been recorded since the beginning of the project. Due to the large number of open work fronts and lack of vehicles, mobility was cited as a major problem by the H&S management.

Use of PPE was noted to be variable at the Andirin Camp. Good use of PPE along the ROW was consistently observed.

At the Orensehir Camp (Fly Camp 4) a safety officer was present on site. There was no paramedic and ambulance present at the time of the visit. It was reported that there is only one ambulance for the different work fronts in this section of Lot C and for the camp. The camp's first aid kit was locked in a building and the safety officer did not have the key. Another first aid kit present in a storage building was noted to be inadequate. The use of PPE was weak throughout the camp.

4.10.2 Recommendations

1. Make sure that the community is protected from the hazard of open trenches, consistent with ESAP commitments. As previously noted, efforts should be made immediately to bring the amount of open trench into compliance with the ESAP.
2. The unauthorized access of third parties to the ROW remains a significant issue for the Project. BTC, BOTAŞ and the EPC Contractors should ensure that all open work areas are clearly designated.
3. IEC noted a variation in the ratio of safety inspectors to workers that is not consistent throughout all three Lots and the pump stations. BTC, BOTAŞ and the EPC contractors should review the number of safety inspectors available in each Lot, relative to the number of active work fronts and workers. Consistency in the ratio of safety inspectors to workers should be reached through all three Lots.
4. There do not appear to be minimal and consistent levels of safety training for safety inspectors. BTC and BOTAŞ are encouraged to review this issue and ensure minimum, consistent standards for training of safety inspectors of the various EPC contractors.

5. BTC, BOTAŞ and the EPC Contractors should review the advanced first aid training requirements and capacity of existing H&S personnel in light of the demands of an increased work force and the number of open work areas.
6. TEPE should review the number of H&S inspectors at all pump station locations to ensure that the ratio of H&S inspectors to workers is sufficient enough to maintain adequate project safety standards. TEPE should also revise their management needs for H&S supervision at pump station locations.
7. Mobility is a significant limiting factor to ensuring adequate health and safety inspection throughout all three lots. BTC, BOTAŞ and the EPC Contractors should review the number of vehicles available for safety inspectors and ensure that this is adequate relative to their mobilization to active work areas.
8. The availability and contents of first aid kits should be thoroughly assessed at all work sites and a minimum, sufficient and consistent standard should be enforced.
9. Transportation safety is a major concern. BTC, BOTAŞ and the EPC contractors should ensure that H&S personnel are actively involved in working with CR staff to promote transportation safety in schools and local communities.
10. The collapse of the Kura River temporary bridge has created a transportation safety problem and a significant dust problem on the Ardahan bypass. BTC, BOTAŞ and EPC Contractors should coordinate to strengthen transportation safety programs and develop safety awareness programs in affected communities, as needed.
11. A review should be conducted of the provision of sanitary facilities and drinking water to workers on the ROW, especially in Lot B, which appears to be inconsistent with what was observed for the other Lots. Sanitary conditions and access to bottled drinking water on the ROW should be ensured to all Project workers.
12. A review should be conducted of the provision of food delivered to workers on the ROW, especially in Lot A and B.
13. It is recommended that there should be defined zones within Lot C Camps where appropriate PPE should be used in working areas, such as CWAA, WWTP, mechanical workshop, etc.

4.11 ENVIRONMENTAL INVESTMENT PROGRAMME

During the mission, the IEC was briefly updated on the status of the Environmental Investment Programme (EIP) in Turkey. The EIP has been reviewed on the basis of information and reports provided by BTC.

No detailed review has been conducted by the IEC on the priority themes identified in the ESAP. At the time of the June-July mission, IEC was informed that six programs of the EIP are underway (Important Bird Areas, Caucasian Black Grouse, Mediterranean Monk Seal, Important Plant Areas, Sea Turtles, Lesser Caucasus Forest Gap Analysis) with a total committed budget of US\$ 1,615,000. Negotiations are ongoing with several organizations to implement the Small Investments Fund (formerly the Small Grants Programme). A second Request for Proposals (RFP) was announced on 10 May 2004. Three themes have been identified: forest habitat assessment, wetlands management and public awareness and community involvement. A total of 45 proposals have been received and 9 have been shortlisted.

IEC intends to mobilize a specialist to conduct an independent review of EIP implementation, possibly during the upcoming mission.

Appendix A

***Trip Summary- 2nd IEC Mission by D'Appolonia for the BTC Pipeline Project
June - July 2004***

For this mission, two members of the team toured Turkey while another two visited Georgia and Azerbaijan, as well as facilities associated with the Azeri, Chirag and Deepwater Gunashli (ACG) Phase 1 Project. The trip summaries of the two groups are presented separately.

Georgia, Azerbaijan, ACG Phase 1 Team:

June 28 – Georgia. Arrive in Tbilisi early morning; in the morning attend meeting with BTC Georgia organization and in the afternoon attend meeting with SPJV E&S staff. Visit CITA biochemical lab and Gamma chemical laboratories at the end of the day.

June 29 – Georgia. The day was spent driving from Tbilisi along the ROW to as far as KP 104, with visits to PSG-2 and the PSG-2 Camp.

June 30 – Georgia. The day was spent driving from Tbilisi along the ROW to as far as KP 166 with the first stop at the Tsalka Pipe Dump and maintenance area at ~ KP 120. Visits were also made to the Tsalka Camp and stops were made at a borrow pit at KP 153, Ktsia and Gumbati river crossings at KP 139 and KP 137, respectively, and a fault crossing at KP 108. .

July 1 – Georgia. The morning was spent driving to Akhaltsike Camp from Tbilisi and then touring the ROW between KP 239 and about KP 223. At the end of the day a stop was made at the Information Center in Borjomi.

July 2 – Georgia. The day started with a visit to the Project offices in Bakuriani, where the team was informed that there were blockages to basically all of the Borjomi area pipeline. The team therefore toured the mechanical yard at Bakuriani and then toured the Project “botanical garden” in Bakuriani. By that time (late morning), the team was allowed access the ROW between KP 188 (area with recent tree felling) and KP 181+600 (the Borjomula crossing). After the ROW tour the team returned to Tbilisi and presented a closeout meeting at the BTC office.

July 3 – Azerbaijan - ACG.

July 4 – Azerbaijan - Preparation of report.

July 5 – Azerbaijan – first ACG and late in the afternoon information exchange meeting with the BTC Azerbaijan E&S staff.

July 6 – Azerbaijan – first ACG and late in the afternoon BTC ROW visit from Sangachal to the mud volcano ridge (~ KP 25).

July 7 – Azerbaijan - BTC. In the morning a visit was made to Kurdamir Camp operated by CCIC. The day continued with visits to the ROW at KP 195 (major canal crossing) and KP221 road crossing with dewatering and a steel microtunnel. The tem spent the night in Ganja..

July 8 – Azerbaijan - BTC. The day was spent traveling along the ROW from KP 410 to KP 291 with a stop to tour the Tovuz Camp. The night was spent in Ganja.

July 9 – Azerbaijan - BTC. Travel from Ganja to Baku with a stop to tour Yevlakh Camp. Present a closeout meeting to the BTC Azerbaijan and BTC CMT staff in the late afternoon at BTC Azerbaijan offices in Baku.

July 10 – Azerbaijan - BTC. Meet with IEC team members from Turkey and finalize cross-country closeout presentation. The closeout was presented in the late afternoon at BTC CMT offices.

July 11 – Depart Azerbaijan after completion of the field mission.

Turkey Team

June 27 - Arrive Ankara.

June 28 – Meetings with BTC and BOTAŞ in Ankara. Fly to Adana in the afternoon. Stay in Azizli Camp.

June 29 – Lot C – travel along the ROW from KP 993 to IPT1. Visit ESA 46 and 47. Interview meetings with IPT1 staff. Stay in Kayseri.

June 30 – Lot C – Interviews and site visit to Andirin Camp. Wrap up in Lot C. Drive to Kayseri.

July 1 – Travel along ROW to Orensehir Camp, site visit. Visit ESA 36 at Zamanti River. Travel along ROW from KP 850 to PT 4 camp. Stay at PT4 camp.

July 2 – Interviews and site visit to IPT4 Camp. Travel along ROW in Lot B, visit archaeological site at KP 681 and Karst area at KP 612-613. Travel to Kova Camp, stay at camp.

July 3 – Interviews and site visit at Kova Camp, Lot B. Visit ESA 25 and ESA 51. Stay at Kova Camp.

July 4 – Travel along ROW and visit ESA 20 (KP452), ESA 19 (KP445). Interviews and site visit at PT3 camp, wrap-up of PT3, stay at PT3 camp.

July 5 – Visit Cardirhaya Camp, close out meeting Lot B. Drive to Erzerum, visit Ilica Camp and ESA 13. Stay in Erzerum

July 6 – Drive to Kars Camp, Lot A. Visit Hansankale River, Koprukhoi Camp. Interviews and site visit (Lot A) at Kars Camp. Stay in Kars Camp.

July 7 – Visit ROW between KP60 and KP2. Visit to Posof River and Posof Reroute. Visit ESA-1. Return to Kars Camp.

July 8 – Close-out meeting in Lot A. Fly to Ankara and meetings in BOTAŞ office.

July 9 – Meetings and consolidation of information in BTC/BOTAŞ office in Ankara. Close-out meeting for Turkey with BTC/BOTAŞ. Fly to Baku.

July 10 – Azerbaijan. Arrive Baku. Meetings in BTC office. Close out meeting for June-July visit with BTC staff.

July 11 – Depart from Baku.

Appendix B
Table B-1: Non-Compliances with ESAP – Azerbaijan

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
2.2.3	The lack of a Change Management process with associated documentation to justify non-compliant activities associated with the 44-meter reinstatement	<i>CCP Reinstatement Plan, Commitments ID: 375, 492, 498, 499, 500, 567, 574, 659, 1211, 1212, 1221, 1244</i>	I	A Change Management process should be followed and completed for the activities of ROW construction affected by the SCP. It is also noted that the Project also has the commitment to complete reinstatement of the entire ROW in places where the SCP follows the BTC pipeline construction by more than a year. This commitment should be properly considered in developing the MOC documentation, as needed.
2.3.2	The Project has yet to complete well testing at Tovuz Camp	<i>CCP Infrastructure and Services, Commitment ID: 276, 278, 280, 833</i>	I	The well testing should be coupled with a review of local water use to verify that the wells does not impact local water wells.
2.3.2	Inconsistencies in testing procedures for potable water quality at camps are still noted. Specifically, the Tovuz Camp water well has not been tested for the full suite of WHO parameters and non-compliant test results have been obtained from tap water samples from other camps.	<i>CCP Infrastructure and Services, Commitment ID: 528, 628</i>	II	Bottled water is used for drinking, but this is not the entire solution to having non-compliant tap water. Drinking water, as defined by WHO, is water that is "suitable for human consumption and for all usual domestic purposes including personal hygiene." Tap water used in the kitchens and in camp housing also needs to be compliant with WHO standards.
2.4.1	Incinerator emissions are effectively unknown and incineration has been very limited. During the field visit IEC still observed poor combustion in the incinerator; uncombusted	<i>CCP Waste Management Plan, Commitment ID: 244, 245, 246, 1051, 1110</i>	II	

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	material (plastic bottles) was observed in the ash from the incinerator. This was observed during the first visit and continues to be observed. The non-compliances identified during the February/March 2004 visit are still valid, including those related to emissions, operation and containment			
2.4.1	Incinerator operations	<i>CCP Waste Management Plan, Commitment ID: 970, 1110</i>	I	
2.4.1	The fate of some significant waste streams could not be tracked to identify their final disposal solution	<i>CCP Waste Management Plan, Commitment ID: 395, 396, 397, 398</i>	II	
2.4.1	A significant amount of waste has been disposed at an uncontrolled dump site, the Balakhany municipal disposal facility	<i>CCP Waste Management Plan, Commitment ID: 391, 428, 533, 1108, 1110, 380, 808</i>	III	The IEC understands that the BP Azerbaijan Business Unit (AZBU) allows for the disposal of non-hazardous waste at Baku dump sites, if they are licensed by the Azerbaijan Ministry of the Environment. The IEC points out that adherence with national "normal practices", national standards, BU practices or standards, etc. does not justify non-compliant conditions with the BTC Project commitments.
2.4.3	Wastewater treatment is still inadequate at most facilities visited and much of the effluent is sent to inadequate municipal plants. The fate of some liquid waste is unknown.	<i>CCP Waste Management Plan, Commitment ID: 553</i>	II	As noted for solid waste disposal, adherence with national "normal practices", national standards, AZBU practices or standards, etc. does not justify non-compliant conditions with the BTC Project requirements. The current use of municipal facilities that are not operating at required standards represents a non-compliant condition and is not acceptable practice.

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
2.5.1	Although some improvements were made in terms of constructing concrete platforms for containing potential spills, several containment problems were still encountered at the different camps. Although all of the fuel storage tanks have been provided with secondary containment, the bunds do not currently fulfill UK best practice. Flow into OWSs was not always guaranteed and in some places OWS systems were not present. Bunding in the hazardous waste storage area at the Kurdamir Camp was broken and the bunding around a diesel storage tank at Kurdamir Camp was deliberately drilled at the base to allow for drainage. In the Yevlakh Camp, drainage from the waste storage areas was directed to an apparent containment from which the ultimate fate of the drainage could not be verified.	<i>CCP Pollution Prevention Plan, Commitment ID: CH12E20</i>	II	Although none of the problems by themselves constitute major hazards, taken together they represent a significant non-compliance in terms of the potential they represent for environmental releases
2.6.1	The length of open trench of 36 km (where the Project commitments are to have no more than 15 km total or 10 km continuous open trench) represents a worsening situation from what was observed in the February – March IEC Mission	<i>CCP Reinstatement Plan, Commitment ID: 172; Commitment Register: Commitments No. 45</i>	III	The amount of open trench in the project is a critical non-compliance situation and major safety concern to the Project that implies a reasonable expectation of impending material damages. The issue of open trench is assigned a Level III, because it is also a repeated Level II.

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
2.6.1	Turbidity measurements are still not consistently being taken at river crossings.	<i>CCP Reinstatement Plan, Commitments ID: 1304</i>	I	As previously noted in the February – March trip report, the intent of turbidity measurements is to document pre-construction conditions, potential water quality impacts downstream and at potential sensitive receptors during construction, and the return to baseline conditions at the end of the construction phase.

Appendix B
Table B-2: Non-Compliances with ESAP – Georgia

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
3.3.1	Sustainability studies to verify that the wells do not adversely impact the local communities have not been completed.	<i>CCP Infrastructure and Services, Commitment ID: N13 (P27)</i>	I	Conduct water sustainability studies as needed – same as recommendation from February – March mission report
3.4.1	Domestic waste has been disposed in a non-compliant incinerator.	<i>CCP Waste Management Plan, Commitment ID: J34, Part I</i>	II	BTC needs to work with SPJV to define a solution to the accumulation of unsanitary “mixed waste” at the CWAA. The plan to use an existing municipal waste disposal site which is not it compliant with Project standards is not considered acceptable by IEC.
3.4.1	The continuing operation of the Project incinerator with improper emissions control is a non-compliance.	<i>CCP Waste Management Plan, Commitment ID: J34, Part I and J36</i>	II	BTC is however undertaking significant effort to improve the functioning of this incinerator and has hired incinerator experts to monitor emissions, improve operations and train staff.
3.5.1	Wastewater from a cement batch plant at the Bakuriani Pipe Yard and Maintenance Area is being disposed into an unlined pit with no treatment, containment and/or monitoring being conducted.	<i>CCP Waste Management Plan- Commitment J19(S6)</i>	II	A dual chamber decantation system allowing for the collection of sludge and the discharge of clean water, probably with neutralization is recommended.
3.5.1	Situations where areas of possible spills or leakage were not properly contained were identified at most of the facilities visited.	<i>CCP Pollution Prevention Plan, Commitment ID: H42</i>	I	None of the problems at camps and work sites by themselves represent high critical hazards, but taken as a whole they represent a non-compliance for the potential they represent for an environmental release.

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
3.6.1	BTC provided contradictory information regarding the amount of open trench in Georgia. Miscalculations of a parameter as significant as the amount of open trench is considered to be a serious management issue and a significant non-compliance.	<i>CCP Reinstatement Plan, Commitment ID: 1104, 1108, CCP Community Safety, Commitment ID: Q8</i>	II	IEC considers that the amount of open trench to be an important issue with respect to E&S as well as H&S and will continue to monitor this issue during future missions.
3.6.1	Topsoil stockpiles not compliant with the technical specifications stated in the SPJV Reinstatement Plan were observed, where topsoil and subsoil were mixed or where piles of topsoil exceeded the 2-m height limit.	<i>CCP Reinstatement Plan, Commitment ID: 139, 142</i>	I	As previously noted during the February – March mission, it was observed during the visit that topsoil management is generally adequate, although there were apparent differences along ROW sections in terms of topsoil stockpile slope and compaction and segregation from subsoil.

Appendix B
Table B-3: Non-Compliances with ESAP – Turkey

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
4.2.1	Lack of mobility and vehicles is a major problem affecting the ability of the EPC contractor E&S teams to access the field to do their job (as well as H&S teams).	<i>Environmental Management Plan - Turkey, Commitment ID: APC1E84</i>	I	EPC contractors should ensure that E&S (and H&S) personnel have an adequate number of vehicles to perform their job in the field.
4.2.1	TEPE still does not have an Environmental Manager in place. This is a follow-up finding to a NCR raised by BOTAŞ in March 2004.	<i>Environmental Management Plan - Turkey, Commitment ID: APC1E34</i>	II	An Environmental Manager should be hired immediately to ensure senior level commitment to environmental management at all TEPE Pump Stations.
4.3.1	Inconsistencies in sampling procedures for potable water quality at camps are still noted.	<i>BOTAŞ Environmental and Social Management Plans, Commitment ID: CH9E3, CH4E41</i>	I	A recommendation previously made in March 2004 to undertake a thorough review of potable water sampling, testing and reporting procedures conducted by experienced professionals does not appear to have been considered. BOTAŞ should therefore work with the four EPC contractors in Turkey to develop established and consistent potable water parameters, sampling protocols and analytical procedures. This should also include the identification of certified testing laboratories and an independent third-party evaluation to assess if they are reliable.
4.3.1	Third party sources of aggregate and cement/concrete supplies still are not being consistently evaluated throughout the Project in terms of their compliance with ESAP requirements in cases where the Project represents a significant percentage of their	<i>Aggregate Management Plan, Commitment ID: APC10E1 CHI7E6</i>	II	Aggregate management is a significant environmental and social concern for the project in Turkey. The Project should clarify for which aggregate extraction sites the Project is the main user and implement a common strategy on how to deal with this

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	production. The overall picture of aggregate management is still unclear in terms of pre-construction assessment and operation management concerning environmental protection, safety and community relations, and reinstatement commitments.			issue.
4.4.3	Discharges of the WWTP at the Kars Camp are still not meeting EU standards, particularly for coliforms and TSS. It was reported that the new WWTP upgrade should meet EU standards shortly. Sewage wastewater is discharged to the Kars municipal sewerage system, which does not have any treatment.	<i>CCP Pollution Prevention, Commitment ID: APC4E39</i>	II	<p>With the exception of the operating WWTP at the Kova Camp in Lot B, sewage from all other facilities visited is being trucked to municipal WWTPs. While this is still considered by the Project to be a “temporary” solution, it is not known whether these municipal facilities do in fact meet EU sewage discharge compliance standards. While a significant commitment and improvement to achieving WWTP discharge in compliance with EU standards is noted from the March 2004 visit, all Project discharges should meet EU standards as soon as possible.</p> <p>If municipal WWTPs need to be used for disposal, BOTAŞ and BTC should provide evidence that these plants are meeting Project standards.</p>
4.4.1	A large concrete wastewater pit was noted at the PT3 batch plant site. It was reported by the Project that sampling has found that the wastewater has a high pH (11-12 range) and contains significant concentrations of heavy metals, particularly chromium. Available information was not sufficient to ensure that	<i>CCP Pollution Prevention Plan, Commitment ID: CH12E20</i>	II	The use of the concrete wash water for dust control at PT3, as well as at other Project facilities, should be carefully evaluated. Disposal options should be carefully evaluated by the Project to ensure that pollution prevention and impact minimization criteria are met. Chromium (and other heavy

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	there is no impact from this wastewater stream.			metals) levels in this wastewater stream should be assessed in light of project standards. If in compliance, the water should be neutralized so as not to pose an environmental hazard.
4.4.1	A TEPE dump truck was observed being washed in a small stream outside of PT3.	<i>CCP Pollution Prevention Plan, Commitment ID: APC4E34</i>	I	Vehicles should be washed in car wash facilities with proper oil-water separation. A driver training program should be implemented.
4.4.1	PT4 – Noise Data - Up to May 2004 readings were taken once a month and two readings were taken in June 2004. Data from the noise register for 26 June 2004 exceeded project standards (70 dB industrial/commercial daytime) at the camp entrance, sleeping areas, WWTP, metal shop and at the construction site (up to 86.7 dB)	<i>CCP Pollution Prevention Plan, Commitment ID: APC1E77</i>	I	BTC and BOTAŞ with the four EPC contractors should develop consistent procedures for noise monitoring establishing the need according to worker safety requirements and the presence of construction activities adjacent to communities.
4.4.1	Noise level measurements in Lot B have been reported as being compliant when in fact they exceed project standards.	<i>CCP Pollution Prevention Plan, Commitment ID: APC1E77</i>	I	Consistent reporting measures should be implemented for recording noise levels. The project standard (daytime) for noise is 70 dB.
4.4.1	A project cement truck had dumped waste cement on the banks of the Karasu River and appeared to have been washed in the river.	<i>CCP Pollution Prevention Plan, Commitment ID: APC4E37</i>	I	Waste cement is not to be dumped near watercourses and vehicles are not to be washed in rivers. The cement in question should be cleaned up and properly disposed of. Driver training of cement vehicles should be implemented regarding environmental control procedures.

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
4.5.1	As noted in the March 2004 visit, the use of flume pipes to maintain irrigation channels is not consistently implemented throughout all Lots in Turkey. Inadequately sized flume pipes continue to cause problems. This was particularly noted in Lot B at the Aksu River where the length of flume pipe was insufficient and there was poor use of geotextile for silt control.	<i>CCP Construction Impact Management Plan, Commitment ID: APA8 S6</i>	II	The lack of an adequate supply and inconsistent use of flume pipes continues to be noted on the ROW in Lot B and causes inconveniences and impacts to local landowners. This NCR was raised in March 2004 and has been raised to a Level II. BOTAŞ and BTC should ensure that all EPC Contractors have sufficient flume pipes available and that construction staff are trained in their use and proper deployment..
4.5.1	The fragmentation of construction activities on the ROW and the delays in reinstatement are a major concern in Turkey. Only 18.5 km (less than 2%) of the total 1,083 km of ROW was reported as reinstated at the time of the June-July visit. Of this 16 km was in Lot C and 2.5 km in Lot B. No reinstatement has begun in Lot A. To date, all three Lots are in non-compliance regarding contractor reinstatement commitments. IEC is particularly concerned about the commitment to reinstatement and about what can be realistically and adequately achieved in the remaining time available in 2004, particularly in Lots A and B.	<i>CCP Reinstatement Turkey, Commitment ID: APC2E7</i>	II	EPC Contractors need to immediately dedicate sufficient resources to implement and comply with the ESAP commitments both for initial and final reinstatement. Project management and Contractor commitment to the importance of reinstatement is to be reinforced. The establishment of a dedicated reinstatement team is to be prioritized by all the Contractors. Practical reinstatement planning consistent across all three Lots is to be developed, including realistic schedules and commitment of manpower and resources to do the job.
4.5.1	In Lot B, there is a persistent and unjustified controversy over reinstatement of the NGP line that is a precise Project commitment	<i>CCP Reinstatement Turkey, Commitment ID: CH15E5, APC2E15, APC2E16, APC2E17, APC2E18</i>	II	BOTAŞ/BTC are urged to resolve any outstanding responsibilities towards reinstatement of the NGP, consistent with

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	specified on Page 15 of the CCP Reinstatement Plan. Delays in the reinstatement of the NGP ROW are not in compliance with ESAP commitments.			Project commitments. A final agreement should be reached between BTC and BOTAŞ regarding the responsibility, resources, equipment and personnel required to restore the NGP ROW where it is parallel to the pipeline
4.5.1	<p>The amount of open trench in the project is a critical non-compliance situation and major safety concern to the Project that implies a reasonable expectation of impending material damages. At the time of the June-July visit, there were 101.9 km of open trench in all three Lots (27.8 km in Lot A, 60.5 km in Lot B and 13.6 km in Lot C). This is not only a significant safety concern for workers and local communities, but the length of open trench is non-compliant in Lot A and Lot B where project commitments limit the length of open trench to 20 km or 40 days construction time.</p> <p>A Level III non-compliance is assigned to BTC because this finding was consistently observed throughout the Project and is a critical and known disregard of ESAP commitments</p>	<i>Community Safety Plan Turkey, Commitment ID: AP C8 S74, AP C8 S94</i>	III	<p>BTC and BOTAŞ should coordinate and ensure that commitments regarding the length of open trench be respected. Furthermore commitments of the ESAP Community Safety Plan Turkey regarding public safety should be adhered to.</p> <p>The Project should develop an Access Management Control Plan for third party access along the ROW and ensure that the Community Relations and H&S Departments of EPC contractors are adequately staffed and equipped, and actively engaged in third party monitoring and community education programs about construction dangers on the ROW.</p>
4.6.1	The March 2004 report highlighted that the CCP Ecological Management Plan recommends special measures to minimize potential adverse effects on species of ecological interest are to be formalized into	<i>CCP Ecological Management Plan, Commitments ID: CH6E40, APC1E103</i>	II	<p>SARMS for ESAs should be carefully revised considering the recovery plan in each Lot and the delays in implementing reinstatement.</p> <p>As recommended in the March 2004 report,</p>

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	<p>working method statements, including the Special Area Reinstatement Method Statements, applicable to ESAs, 60 days prior to construction commencing.</p> <p>Although some actions have been taken (i.e., strengthening the reinstatement expertise of field staff, through the appointments of experienced ecological advisors by BTC), the non-compliances opened in March are still not properly addressed by the Project.</p>			<p>BTC and BOTAŞ should continue to focus on implementation of commitments in ESAs and systematically monitor and ensure that the spirit of the EIA studies is fully applied in these areas, as well as in other sensitive locations (e.g., river crossings). IEC also again recommends the development of a specific Turkey monitoring plan for ESAs.</p> <p>BTC and BOTAŞ should consider strengthening their respective field staff with additional experienced environmental and ecological specialists to monitor ecological commitment implementation (i.e., special topsoil management, plant translocation, seed collection, etc.), also taking into account the current delays in reinstatement activities and the need to have adequate resources to meet the Project commitments for biorestitution.</p>