

# OFFICE MEMORANDUM

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TO: Mr. Richard E. Bissell, Chairman, The Inspection Panel

THE INSPECTION PANEL

FROM: James D. Wolfensohn

EXTENSION: 81384

SUBJECT: ARGENTINA - Second Yacyretá Hydroelectric Project  
(Lns. 2854-AR and 3520-AR)  
Management Response to the Request for Inspection

1. On October 1, 1996, the Inspection Panel registered a Request for Inspection concerning the above-referenced project, the implementation of which is currently supported by two Bank loans. The attached Response has been prepared in close coordination with the Inter-American Development Bank, and addresses all of the issues raised in the Request. In our response, we provide supporting evidence and details to demonstrate that the Bank has not been remiss in complying with our policies for such operations. In particular, the response highlights the thoroughness of the Environmental Assessment in identifying environmental risk and mitigation measures.

2. The crux of the matter is that not everything has gone, nor will go, perfectly well and there are still large uncertainties in completing the operation. This has to do with the planned privatization and the need to complete a very substantial resettlement component prior to filling the reservoir to the next levels -- 78 meters above sea level (masl) and 83 masl. For the works done to date and the filling to the 76 masl level, while there have been delays, there is little evidence of harm having been done to the affected parties. The next major hurdle is a decision to be taken on privatization: that will determine what happens next. In our response, we stress that the Bank has adequate safeguards to ensure that all resettlement and environmental mitigation measures are implemented before raising the reservoir above the elevation 76 masl, regardless of who operates the Yacyretá complex.

cc: Messrs./Mmes.: Kaji, Koch-Weser (o/r) (EXC); Shihata, Rigo (LEGVP); Alexander (OPRDR); Burki, Ody (LACVP); Ecevit (LATSO); Nankani (LA1DR); Augusto, Hagerstrom (LA1C2); Faiz, de Franco (o/r), Klockner, Jadrijevic (LA1IU); Oliver (LA1ER); Collell, Molnar (LEGLA)

**ARGENTINA**

**SECOND YACYRETA HYDROELECTRIC PROJECT  
(Lns. 2854-AR and 3520-AR)**

**MANAGEMENT RESPONSE  
TO THE  
REQUEST FOR INSPECTION  
SUBMITTED TO THE  
INSPECTION PANEL  
ON SEPTEMBER 30, 1996**

**October 29, 1996**

## ACRONYMS AND ABBREVIATIONS

EA	Environmental Assessment
EBY	Yacyretá Binational Authority <i>Entidad Binacional Yacyretá</i>
GOA	Government of Argentina
GOP	Government of Paraguay
GWh	gigawatt hour
IDB	Inter-American Development Bank
IRR	Internal Rate of Return
kWh	kilowatt hour
masl	meters above sea level
MW	megawatt
NGO	Non-Governmental Organization
OD	Operational Directive
OED	Operations Evaluation Department
OMS	Operational Manual Statement
OPC	Operations Policy Committee
OPN	Operational Policy Note
REMP	Resettlement and Environmental Management Programs
SEGBA	<i>Servicios Eléctricos del Gran Buenos Aires, SA</i>

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## **ARGENTINA**

### **SECOND YACYRETA HYDROELECTRIC PROJECT**

#### **REQUEST FOR INSPECTION: MANAGEMENT RESPONSE**

##### **1. INTRODUCTION**

1.1 On October 1, 1996, the Inspection Panel registered a Request for Inspection concerning the Yacyretá Hydroelectric Project, the implementation of which is currently supported by two Bank loans. The Request was submitted by Sobrevivencia/Friends of the Earth, a non-governmental organization (NGO) based in Paraguay. An identical Request has been presented to the Investigation Mechanism of the Inter-American Development Bank (IDB). This Management Response has been prepared in close coordination with the IDB, and has been formulated to address all of the issues raised and allegations made in the Request.

##### **Eligibility Issues**

1.2 There are certain eligibility questions relating to the Request that are important to emphasize in the light of the requirements of the Board Resolution establishing the Panel:

- (a) Bank management is addressing the Request primarily in the context of Loan 2854-AR (which is 75% disbursed); other loans cited in the Request have either been fully disbursed and closed long before the Request was filed (Lns. 1761-AR and 2998-AR), or have been substantially disbursed (Ln. 3520-AR, currently 98% disbursed), thus falling outside the scope of the Panel's jurisdiction (see Board Resolution, para. 14 (c)). Note, however, that the legal documents for Loan 2854-AR were amended in 1994 to incorporate provisions relating to Loan 3520-AR project activities; those provisions pertain in part to the environmental mitigation and resettlement plans addressed at length in the Management Response.
- (b) In a departure from the terms of Board Resolution, para. 12, the Request is not being filed "by an affected party in the territory of the Borrower." The Borrower with respect to Bank loans for the Yacyretá Project is the Argentine Republic, whereas Sobrevivencia and the individuals it claims to represent are all Paraguayan. Nevertheless, in the unique circumstances of this case, where there is binational execution of the project and where the physical impact of the project occurs mostly in the territory of the national partner that happens not to be the borrower, Management understands the pragmatic interest in applying the Board Resolution flexibly on this point.

- (c) It is inappropriate for Sobrevivencia to have filed the Request partly on its own behalf, for there is no allegation that the NGO has suffered or will suffer a material adverse effect as a result of alleged Bank policy violations. Consequently, the NGO is not an affected party according to Board Resolution, para. 12. Nevertheless, Management recognizes that, as a local Paraguayan NGO, Sobrevivencia can file the Request in representation of true affected parties (e.g., Paraguayan individuals for whom specific harm allegations are made).
- (d) The identity of those individuals that Sobrevivencia claims to represent is being held confidential by the Panel at the request of the NGO. Although the Board Resolution itself does not address the issue of claimant anonymity, Management understands that there have been Panel precedents in this regard. Nevertheless, it is important to note that such anonymity imposes serious constraints on Management's ability to respond fully to the Request, particularly with regard to issues, vital in the context of respecting the terms of the Board Resolution, such as scope of the alleged harms, exhaustion of remedies, seriousness of alleged violations and causation. Management is responding as best it can to the Request despite the claimants' anonymity, but we urge the Panel to take these constraints into account when assessing whether the Request meets the eligibility criteria required by the Board Resolution.

### **The Management Response**

1.3 The Request raises a number of important issues concerning the design and implementation of the project which have also been of concern to Management. The Second Yacyretá Hydroelectric Project is designed to complete the remaining work, including resettlement and environmental mitigation, to enable the Yacyretá project to reach its full productive capacity. It was recognized at appraisal, both by the Bank and the IDB, as being a project with significant attendant risks; in the Staff Appraisal Report<sup>1</sup>, the three major risks associated with the project were considered to be: (a) possible unavailability of funds; (b) failure to implement the resettlement and environmental mitigation activities satisfactorily; and (c) failure to implement the transmission line on time.

1.4 Given its very considerable support over a long period, the Bank concluded that the project would benefit from its continued involvement. In particular, the Bank's presence was considered crucial in overcoming the project's "stop-go" pattern of implementation and in catalyzing improved project management and organization, Government commitment in terms of funding, and promotion of private sector involvement. Measures to address the risks were incorporated into the project's design,

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<sup>1</sup> Report No. 10696-AR, dated August 31, 1992.

and this has been translated into practical concern by means of a large supervision effort, with coefficients for staff support five times the Bank average.

1.5 In practice, a number of the potential problems foreseen have occurred; there have been further delays, particularly with resettlement and environmental mitigation, and the Borrower is not in compliance with its obligations in some areas. Most of these relate to raising the reservoir level above its present 76 meters above sea level (masl), an event that has been postponed for the time being in view of budget constraints and the intention to complete the project with private sector participation, through a concession for the operation, maintenance and marketing of energy produced by Yacyretá to the private sector via a competitive process.

1.6 The strategy of the two governments to complete the project through the proposed privatization scheme is fundamentally sound, provided the Yacyretá Binational Entity (EBY) takes the required measures to implement the environmental and resettlement activities associated with raising the reservoir level above 76 masl. Adequate legal safeguards are provided in both the Bank and IDB loans to ensure full compliance with these requirements. With respect to compliance with pending actions related to elevating the reservoir to the current operating level of 76 masl, a time-bound Action Plan, supported by a Special Account, has been put in place to complete all pending actions no later than December 1997. The pending actions are defined in Attachment A. This Action Plan is the subject of intensive Bank supervision. In the event that the proposed privatization program is not implemented by February 1997, EBY in consultation with the two Governments will propose to the Bank and IDB a plan for future operation and financing of Yacyretá. This plan could include the option of operating the reservoir at its existing level of 76 masl and deferring those additional investments needed to raise the reservoir to its full design level.

1.7 The Request to the Panel claims that certain members of the local population have suffered material harm as a result of the Bank not following its own procedures and policies in the design and implementation of the project. These claims are set out in detail in Section 3, and refer to alleged failures in dam design, failure of the Bank to finance environmental and resettlement activities, inadequate participation of the local population, failures concerning resettlement and compensation, health problems, indigenous people, flaws in the Environmental Assessment, failures in project supervision, the economic cost of energy generated at Yacyretá, and the anticipated impact of privatization of the project's operation, among others.

1.8 We do not agree that the problems which have occurred and their possible consequences for the local population are the result of any alleged Management violation of the Bank's policies and procedures. The salient features of the Management Response are:

- the project made economic sense when conceived and, even though the economic realities have since changed, it still makes more sense to complete the project than to stop it.

- all resettlement and environmental mitigation activities required prior to reaching the current reservoir level of 76 masl have been met (except some pending matters which are being addressed through appropriate financing and supervision).
- the impacts of increasing the operating level of the reservoir above 76 masl have not yet occurred and are covered by sufficient legal covenants in full compliance with Bank policies.
- although counterpart funding shortfalls have delayed project implementation, they have not caused harmful impacts, precisely because the reservoir has not been raised beyond its initial operating level.
- the delay in increasing the operating level of the reservoir is, in part, attributable to the Bank's supervision efforts to ensure compliance with resettlement and environmental management activities, supporting the essential principle of Bank operations that the exercise of available legal remedies is not a requirement but a discretionary tool, to be applied only after other reasonable means of persuasion have failed.



## **2. DESCRIPTION AND PRESENT STATUS OF THE PROJECT**

**2.1** The Yacyretá Hydroelectric Project is a joint venture being developed on the Paraná river under an international treaty<sup>1</sup> ratified by the governments of Argentina and Paraguay in 1973. The main objective of the project is to provide base-load hydroelectric energy for Argentina's grid. It is a complex undertaking consisting of a large earth dam approximately 65 km long; power generation with a designed final capacity of 3,100 MW; a navigation lock, fish passage and other support facilities; and a large program of infrastructure relocation, population resettlement and environmental impact alleviation. The project is located about 80 km down-stream of the cities of Encarnación in Paraguay and Posadas in Argentina.

**2.2** The origins of the project can be traced to a joint protocol signed by the two countries in 1926 in connection with the use of the Apipé Falls. A Technical Commission was established in 1958 to carry out studies, and the detailed design of the project was completed in 1978. On the basis of this design, the Bank approved its first loan to the Government of Argentina (GOA) in support of the project (Ln. 1761-AR for \$210 million, approved in October 1979). Additional financial support was provided under the Electric Power Sector Project (Ln. 2998-AR for \$252 million, of which \$250 million was destined to Yacyretá, approved in October 1988). Both of these loans were evaluated in the Performance Audit Report produced by the Operations Evaluation Department (OED) and sent to the Board in June, 1996.<sup>2</sup>

**2.3** The latest Bank loan (Ln. 3520-AR for \$300 million, approved in September 1992) supports the Second Yacyretá Hydroelectric Project which is designed: (a) to complete the civil works and commission the first six generating units (of an eventual 20); (b) to support environmental protection and social aspects; and (c) to encourage the participation of private capital in the project. The Bank also agreed, in 1994, that uncommitted funds (of US\$137 million) in the loan to support the SEGBA V Power Distribution Project (Ln. 2854-AR for \$276 million, approved in June 1987) could be used for Yacyretá. The Bank's total commitment to Yacyretá is \$897 million. Since its first loan in 1977, the IDB has committed US\$840 million to the project.

**2.4** The project has suffered numerous and significant problems in implementation. The most recent estimates indicate that it will be completed in 2000, with an eleven-year delay and, at an estimated final cost of \$8.22 billion, a 59 percent cost overrun in current

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<sup>1</sup> The Treaty of Yacyretá, signed on December 3, 1973, has been expanded through numerous amendment letters.

<sup>2</sup> Report No. 15801, dated June 28, 1996.

price terms.<sup>3</sup> A major procurement dispute concerning civil works delayed the project's start-up. Further delays were caused by Argentina's economic and political difficulties throughout the 1980s and the consequent problems of project finance.

2.5 A number of changes were introduced in the scope of the project: in 1986, facilities to permit increasing the number of generating units beyond twenty were eliminated from the design in order to reduce project cost, and in the early 1990s it was decided to start operating the reservoir at a reduced water level of 76 meters above sea level (masl), instead of the maximum design level of 83 masl, in order to re-phase major investments for resettlement, infrastructure, environmental mitigation and land acquisition.

2.6 When the latest Bank loan (Ln. 3520-AR) was approved, Management agreed to provide the Board with periodic progress reports on project implementation. The most recent report, of April 17, 1996, was supplemented on June 27, 1996 with the findings of the May 1996 Bank supervision mission. The current status of project implementation is summarized in the following paragraphs.

2.7 The main civil works, and the supply and installation of electro-mechanical equipment, are progressing satisfactorily and according to schedule. Main civil works are expected to be completed by the end of 1996. With the most recently installed generating unit having been commissioned in October 1996, there are now eleven units under commercial operation. While installation of all twenty units should be completed by mid-1998, operation of the reservoir at level 83 masl is not expected until January 2000. To complete the project, the following activities remain: (a) complementary works (resettlement, coastal treatment, and infrastructure relocation works); (b) civil works for the protection of the Aguapey and Tacuari streams; and (c) civil works for water flow control of the Aña Cuá spillway and coastal treatment of the Apipé island.

2.8 The implementation of the Resettlement and the Environmental Management Programs (REMP) has been delayed because of administrative bottlenecks and budgetary constraints. The implementation of the REMF related to reservoir levels above 76 masl has been delayed by more than two years and is currently nearly halted, mainly because of the Governments' decision to hold implementation until the privatization scheme for Yacyretá is approved by the Argentine and Paraguayan Congresses. The general economic down-turn and the contraction of public sector expenditure in Argentina in the wake of the "tequila effect" has made matters worse. Socio-economic outcomes of the relocation of the population affected by operation of the reservoir at level 76 masl are mostly satisfactory.

2.9 As agreed with the Bank in May 1996, EBY has secured the funds and started implementation of pending actions related to raising the reservoir to level 76 masl, such as: (a) contract signature and starting of the construction of the 28 houses; (b) compensation to all small brick makers (*oleros*); and (c) signing of contracts for the construction of the

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<sup>3</sup> This estimate includes interest during construction. The cost overrun on capital investment due to physical contingencies, in constant 1977 price terms, is approximately 20%.

communal infrastructure in the Caraguatá and Yacarey areas and of the drainage system in the Atinguy area. These activities will be completed by the end of 1997, thus concluding the resettlement and environmental mitigation measures required for raising the operating level of the reservoir to level 76 masl. An increase in the operating level of the reservoir above the current level 76 masl depends upon the satisfactory completion of pre-defined portions of the REMP, as defined in the Loan Agreement and Schedule 2 of the Project Agreement. The GOA, the Government of Paraguay (GOP) and the *Entidad Binacional Yacyretá* (EBY) have agreed that there will be no further increase in the reservoir elevation until the satisfactory completion of the required environmental and resettlement actions.

2.10 As the operating level of the reservoir has been restricted to 76 masl until additional funding for the project is secured (through privatization or direct public expenditure), no resettlement actions for increasing the operating level of the reservoir above 76 masl have been initiated, except for housing design and social support programs. The housing program, which involves the construction of about 2000 houses to be financed by IDB, is the critical element for reaching level 78 masl. Effectiveness of the IDB loan remains contingent on the appointment of consultants for engineering updating and supervision of complementary works.

2.11 Beyond the requirements of the REMP, the GOP has taken the responsibility for relocation of "additional families" (i.e., those families that moved into the area to be flooded by the reservoir after EBY's 1990-91 census and which, therefore, are not included under EBY's REMP). Land in the Itapazo area has been acquired for this purpose. The bidding process for the construction of facilities for water and electricity supply is under way under Ln. 3842-PA which includes a component of US\$1.2 million to support resettlement activities. The contractor will be selected by December 1996, and the works should start and be completed by January 1997 and July 1997, respectively. In Encarnación, some of these displaced additional families are living in precarious conditions. On the Argentine side, the Federal Government has agreed to take responsibility for relocation of additional families (61 small brick-makers) affected by the present operating level of the reservoir. The GOA and EBY will provide the counterpart funds to access financing available from Bank Loan 3821-AR to finance the construction of the 61 houses, which will start before December 1996. For the relocation of these families, EBY has made available the land and has provided water, electricity and access roads.

2.12 The reduced GOA contribution to the project's 1995 budget following the "tequila effect" caused EBY's financial situation to deteriorate. As a result of the GOA decision not to finance its contribution to the 1996 project budget, and a decision based on its agreement with the GOP to complete remaining project works through a privatization scheme, EBY's electricity sales remain its sole source of funds. This is not sufficient to meet the financial requirements for the continuation of the resettlement, environmental, and infrastructure works, and to pay outstanding debts to contractors, until privatization is completed. Following strong representation by the Bank to the GOA to meet its Loan obligations, EBY secured in August 1996 a US\$50 million credit from a local bank to

finance partially its 1996 cash deficit and implement the plan agreed with the Bank to complete pending actions required for raising the operating level of the reservoir to 76 masl (estimated cost: US\$16 million). The plan is being implemented satisfactorily and according to schedule. As agreed with the May 1996 Bank mission, to speed up payments for those activities related to level 76 masl that needed immediate attention, a special account with an initial deposit of US\$6.0 million, managed by EBY's Executive Director and Financial Manager, has been established in a commercial bank (the Banco Francés, in Buenos Aires). To ensure the availability of funds beyond the initial deposit to finance the remaining activities under the agreed plan, some of which will be completed towards the end of 1997, EBY agreed to establish an escrow account.

2.13 The Governments' strategy to complete the project through the privatization scheme is satisfactory. In November 1995, the GOA and the GOP signed a Protocol providing for the contracting of a private operator under a 30-year concession for the operation and maintenance of the Yacyretá plant and the marketing of energy. The Argentine Senate has approved the Protocol, but its approval by the Chamber of Deputies in Argentina and the Congress in Paraguay may face difficulties which, in turn, could impose rescheduling of the privatization plans. Privatization bidding documents are being prepared by the two Governments, in compliance with the REMP covenants in Loan 3520-AR. The Bank will review the documents following approval of the Protocol by the two Congresses, to ensure: (a) adequate funding for completion of the main civil works; (b) adequate funding of the itemized investment and recurrent costs of all necessary environmental mitigation and resettlement activities; (c) the adoption of adequate environmental rules for dam and spillway operation; and (d) the establishment of a realistic timetable for future raising of the reservoir to its final design level. It has been agreed with EBY and the GOA that the privatization will be subject to compliance with all the relevant Loan covenants under the Bank's and the IDB's loans, especially those concerning resettlement and environmental activities. Under the privatization scheme, funding for implementation of these activities will be assured through an escrow account managed by EBY and funded by the private concessionaire responsible for the marketing of energy and revenue collection.

### 3. SUMMARY OF SPECIFIC ISSUES, AND RESPONSES

#### 3.1 The Request for Inspection (the Request) concisely presents its case that

"the claimants have suffered, as a direct result of .... the violations of Bank policies ... serious impacts on their standards of living, their economic well-being, and their health."

In addition, the Request claims that

"the Bank has .... failed to adequately supervise the Borrower or the beneficiary, with the result that the programs designed to mitigate the social and environmental impacts of the project have been neglected to the harm of the claimants and others directly affected by the project."<sup>1</sup>

3.2 The Request makes a large number of claims including alleged actions or omissions on the part of the Bank with respect to the design and implementation of the project. The claims are frequently not linked directly to specific Bank operational procedures and policies. Instead, a blanket reference is made to seven ODs, two OPNs, and one OMS, with the assertion that "during the course of the design and construction of the... Project, each of these policies has been violated"<sup>2</sup>. A number of the claims do not comply with the criteria of eligibility specified in the Board Resolution establishing the Panel. However, all of the points raised in the Request are dealt with in this Response in order to provide the fullest possible information. The claims made are summarized individually in matrix form in Attachment B and, where appropriate, are cross-referenced to the alleged violations of Bank policies and procedures. In order to avoid repetition, related and over-lapping claims have been grouped together, in the following sets of Claims and Responses.

3.3 *Claim: Bank policies which recognize that design considerations, such as lower reservoir levels, can reduce the social and environmental impacts of a project have not been applied, and inadequate consideration was given to design alternatives (Request, paras. 13 and 14).*

3.4 **Response:** We do not agree with this claim. The Bank carefully analyzed available design alternatives at the time of project preparation and processing of the first loan. As the project site was defined, trade-off analysis concentrated on different

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<sup>1</sup> The Request for Inspection, para. 2.

<sup>2</sup> The Request for Inspection, para. 19.

reservoir operating levels. The Environmental Assessment (EA) concluded that most significant ecological and cultural site impacts would be felt even at the lowest operating level of the dam. Summaries of: (a) the comparison of potential impacts at different operating levels of the reservoir; and (b) the principal environmental mitigation measures, are presented in matrix form in Attachment C. The design of the resettlement and environment mitigation program was done carefully and in accordance with all Bank procedures and policies.

3.5 The cost-benefit analysis originally carried out for the project concluded that the higher resettlement and infrastructure relocation costs associated with higher operating levels of the reservoir would be significantly outweighed by the incremental revenue resulting from increased energy generation, giving a higher rate of return for the overall project. This conclusion remains valid. As described above, under the scenario of permanent operation at level 76 masl, only about two-thirds of the designed power output would be generated. The cost to generate this amount of energy foregone at another site and with other sources of energy would be much higher than undertaking the additional capital expenditure to enable Yacyretá to operate at its designed capacity, including the incremental costs of resettlement, environmental mitigation, and infrastructure relocation.

3.6 *Claim: The Banks did not adequately finance the environmental and social mitigation required by the project, requiring the GOA to provide counterpart funding for land acquisition, administration and the resettlement and environmental protection program. In addition, the Banks failed to incorporate resettlement planning in the design and financing of the project, in violation of OD4.30 (Request, para. 22).*

3.7 **Response:** The first assertion is based on a misunderstanding of Bank policy, and the second is incorrect. Bank policies require that, where resettlement and environmental mitigation operations are required, firm financial arrangements which ensure adequate resources to implement them should be agreed with the Borrower, but they do not require that the Bank loan itself should finance all or any part of the environmental mitigation and resettlement operations. Moreover, OD12.00 establishes that the Bank normally does not disburse against purchase of land and the Operations Policy Committee (OPC) confirmed in April 1996 that the Bank does not finance land. In this project, the Bank has firm legal agreements with the Borrower that provide complete and comprehensive financing for all environmental mitigation and resettlement operations. The fact that the Borrower prefers to use its own resources to finance the bulk of resettlement, and that it requested Bank finance only for strengthening capacity to implement the agreed Resettlement Plan, does not violate Bank policy.

3.8 A complete detailed Resettlement Plan, including design and finance commitments, was prepared by the Borrower agency and submitted to the Bank for review prior to appraisal of the Second Yacyretá Hydroelectric Project. The Plan was appraised in the field by a Bank resettlement expert. Consultations were held with affected people, local governments, NGOs and technical staff of EBY. Families affected by the filling of the reservoir were identified through a house-to-house census conducted in 1990-1991 by the resettlement planning team. All these families are included in the Resettlement Plan. For

those families who moved into the reservoir zone between 1991 and the present, the respective governments have agreed to provide replacement house plots, electricity, potable water, sewerage and drainage, access roads and technical assistance in self-relocation. The Resettlement Plan<sup>3</sup> was formally agreed in negotiations with the Borrower, and subsequently incorporated in its entirety into the legal agreements signed by the Governments of Argentina and Paraguay and the World Bank. The resettlement process now underway is guided by this legally-binding REMP.

**3.9 Claim:** *Basic rights of participation and access to information have been denied; the EBY and the Banks have been unresponsive; and efforts to raise problems and concerns with them have been unsuccessful, in violation of OD4.30 (Request, paras. 21 and 27).*

**3.10 Response:** We do not agree with the statements made. The Resettlement Plan was designed in part through consultation with representatives of the affected people (i.e., Neighborhood Committees organized in the late 1980s), elected representatives in local government, social workers, anthropologists and other resettlement staff of the Borrower agency. Since 1990, the Borrower agency has maintained offices in the affected neighborhoods, staffed by full-time social workers who interact on a daily basis with the affected families and accompany each family in its relocation. Every Bank mission between 1991 and 1996 has met with affected families and their representatives. The alternatives provided by the Resettlement Plan were identified in this process of consultation. The Plan stipulates a choice between cash compensation and one or more resettlement alternatives for peri-urban brick makers, agricultural families and urban slum dwellers affected by the reservoir filling. These include formerly landless farmers -- the majority -- who are eligible for title to land and houses at no cost. Attachment D shows the types and numbers of families affected in filling the reservoir to level 76 masl, the resettlement alternatives offered, the alternatives selected and the location of the families today.

**3.11** The Bank has provided to concerned NGOs and institutions all relevant information regarding the EA report of the project. The Bank required EBY to carry out extensive consultations with NGOs and other interested parties. A three-day workshop with the assistance of more than 60 local, regional and national NGOs (of both countries) was held in Ayolas in March, 1992 specifically to review the draft EA document and the proposed environmental management plan for the project. Similar meetings were held in Encarnación and Posadas during the same year. A Bank-financed Environmental Management Training Seminar was held in Ayolas in July, 1993. Over 60 participants from government and NGOs of Paraguay attended. The Yacyretá EA, containing the agreed Environmental Management Plan, was the focus of the seminar and was thoroughly discussed and analyzed. Official and informal meetings have been held with federal environmental agencies, municipalities, provincial natural resource agencies and local

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<sup>3</sup> *Resettlement and Rehabilitation Plan: Yacyretá Hydroelectric Project, July 31, 1992.*

NGOs throughout the process of project preparation and implementation, in both Argentina and Paraguay.

3.12 In line with Bank policy on Dams and Reservoirs, a panel composed of internationally-recognized experts on environmental and social impacts was created by EBY in 1992. The Panel meets twice per year in response to an agenda prepared by the Borrower. The Panel: (a) responds to emergent issues or problems on which the Borrower requires technical advice and expert opinion; and (b) makes independent observations on the implementation status of agreed programs and provides feedback to the Borrower. In the latter capacity, the Panel conducts field inspections, interviews affected people and their representatives, consults regional and national experts, carries out analytical work and makes recommendations. The Panel provides written reports to EBY, with copies to the Bank. Bank supervision mission have regularly attended briefings over the past four years, together with EBY professionals, provided by the members of the Panel. The Panel convened at the project site between October 21-25, 1996, and the report, with conclusions and recommendations, will be prepared by the end of October.

3.13 *Claim: The Banks failed to ensure that Argentina or EBY had the institutional capacity to implement a resettlement program (Request, para. 24).*

3.14 **Response:** We do not agree with the basic premise. While it may be true that such institutional capacity could be improved, nothing in the Bank's procedures oblige it to ensure a given outcome. The Resettlement Plan was prepared in 1991-1992 by experienced professional staff assembled by the Borrower agency, supplemented by internationally-recognized consultants. Beginning in 1992, implementation capacity was strengthened as part of the agreed Resettlement Plan, which includes the permanent recruitment of a properly qualified and experienced resettlement coordinator, social workers, agricultural extension specialists, health specialists, educators, engineers and others. The Bank loan financed this augmentation of institutional capacity, which continues to the present.

3.15 *Claim: The Environmental Trust Fund, designed to receive part of the proceeds from energy sales and to finance environmental mitigation and resettlement, has not been created (Request, para. 26).*

3.16 **Response:** The claim is incorrect. The Trust Fund (to finance all the activities of the REMP) was established by EBY in November 1994 in the Banco de la Provincia de Buenos Aires. Although the amounts deposited in this Fund were not precisely those agreed with the Bank, the Borrower has funded the required environmental and resettlement programs up to elevation 76 masl through the Fund and otherwise. After reaching elevation 76 masl, the sponsoring governments decided to complete the project above elevation 76 masl through a privatization scheme of the operation and maintenance of the Yacyretá plant and the marketing of energy. In early 1995, the GOA reduced by 50% its budget contribution to the project for 1995 and totally eliminated its contribution for 1996. However, to complete actions required for raising the reservoir level to



76 masl, the GOA authorized EBY to borrow funds against future electricity sales (see para. 3.66).

**3.17 Claim:** *The Banks failed to ensure that people resettled under the project were able to improve, or at least to maintain, their standards of living, in violation of OD4.30 (Request, paras. 28 and 29).*

**3.18 Response:** We do not agree with this assertion. An independent evaluation<sup>4</sup> of the conditions of the resettled population (i.e., all people displaced by reservoir filling to level 76 masl) was conducted by resettlement experts contracted by the Borrower and financed by the Bank loan, in accordance with the Resettlement Plan. This evaluation found that the great majority of affected people who selected a resettlement option -- rather than cash compensation alone -- have successfully re-established their production systems, show no evidence of impoverishment, and (in many cases) have improved their income. The evaluation further concluded that all resettled families have better living standards than before their resettlement, including much-improved environmental health conditions, secure property tenure, access to basic public services (i.e., potable water, education, electricity and health care) and improved housing.

**3.19 Claim:** *The Borrower failed to establish a fair or equitable system of compensation. Many affected families have not received adequate compensation, and many have not been compensated in advance for their losses. The lack of a framework for equitable compensation has deprived them of the ability to negotiate fairly with EBY (Request, para. 31).*

**3.20 Response:** We do not agree with these assertions. The level of compensation paid to indemnify for property lost according to the Yacyretá Treaty is determined by a binational commission composed of an equal number of retired members of the judiciary from each country. The EBY has no power to adjudicate or negotiate the amounts of compensation paid. The Commission calculates compensation amounts based on the market replacement value. Records show that less than 5% of compensation awards have been disputed. No property has been affected without fair compensation being first paid to affected owners. In some cases, owners of property have disputed the compensation amounts, in which cases the amount offered -- but rejected by the awardee -- was deposited in an escrow account in the name of the affected party and held until such time as appeals were heard by the responsible judicial authorities in the respective countries.

**3.21 Claim:** *Serious health problems have been caused by the reservoir. These were not anticipated in the EA, and the Banks have failed to supervise or monitor the Borrower's and the beneficiary's performance to mitigate them (Request, para. 34).*

**3.22 Response:** We do not agree with these assertions. The EA report presents an in-depth analysis of anticipated health impacts. One of the EA authors is a well-known

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<sup>4</sup> Scombatti, M. and R. Carvalho. 1995. *Evaluación del Plan de Reasentamiento y Rehabilitación* (five volumes). Buenos Aires, Asunción and Washington, D.C.

expert on epidemiological conditions along the Paraná river and in Argentina as a whole. The health conditions existing in the area of influence of the project prior to the project were quite deficient. Major endemic diseases included hepatitis, various gastro-intestinal infections and parasites. Contaminated water resulting from deficient waste disposal and sanitation systems constituted a significant public health threat, especially in the urban areas.

3.23 Reversing and improving negative health conditions in the region is a major objective of the agreed REMP. The program consists of two interrelated activities: environmental health monitoring and treatment of illnesses and/or disease vectors. Health issues have been monitored from two basic viewpoints: epidemiological surveillance and the availability of basic health services in resettlement areas. Epidemiological surveillance on the Paraguayan side has been carried out in close coordination between EBY and health agencies of the Departments of Itapúa and Misiones. The project has financed an Agreement between Paraguayan and Argentine health agencies to monitor and treat clinical diseases in the area of influence of the project. In addition, the project financed an area-wide monitoring and control of vector-borne diseases, carried out by a prestigious academic center in Argentina. Local health agencies have been trained in monitoring, data interpretation and control techniques.

3.24 The Entomology Department of the La Plata Museum of Argentina has monitored vector organisms (especially mosquitoes) in the area of the reservoir since 1993, starting before the reservoir was filled to level 76 masl. Their findings, based on composition and relative abundance of species, do not indicate any changes in these parameters which can be interpreted as an additional incidence of vector diseases in the area due to filling the reservoir to level 76 masl. Malaria vectors of the genus *Anopheles* (e.g. *A. darlingi* y *A. albiparvus*) are endemic in the area of the reservoir. The data gathered so far indicated that seasonal population behavior of these species does not present significant variations when compared to their behavior before dam construction. Yellow fever and dengue vectors are also endemic for this area, as they are for the whole Paraná basin.

3.25 *Claim: The Mbya Guaraní have lost their traditional territory, and their livelihoods have completely changed. The land allocated to them is inadequate. They were not allowed to participate in decision-making nor given alternatives (Request, para. 36).*

3.26 *Response:* The first assertion is a statement of fact. The second and third assertions are incorrect. Some 10-20 Mbya families moved off the island of Yacyretá in 1974 and became scattered in several locations on the mainland, for reasons that are unknown and prior to Bank involvement. These are the only Mbya people known to have been resident on the island(s) of the Paraná river. In 1987, the Bank received a request from the Episcopal Conference of Paraguay, on behalf of the Mbya families, to consider them as having been displaced by the Yacyretá Project because they had fled the island to avoid problems with authorities when they learned of the construction of the dam. Following meetings between the Bank, the Borrower agency and the Episcopal

Conference, the Borrower agency volunteered to purchase a 370 ha tract of forest land and to offer the Mbya the opportunity to reunite on this land.

3.27 In 1988, the 21 Mbya families that accepted this offer were then assisted to relocate by the Borrower agency, which provided, in addition to title to the land, transportation to the site, building materials for houses, a school, a drinking water well, seeds, tools, medical care and agricultural extension services. Under the Second Yacyretá project, electricity, a tube well, milk cows, fruit trees, continued medical care and agricultural extension have been provided. The Mbya have reported to successive Bank missions their gratitude for the fact that for the "first time in memory" they have legal title to land and are protected from Paraguayan invasions of their territory. Paraguayan anthropologists have accompanied and assisted the Mbya in reuniting on their new lands. At 17.62 ha per family, the carrying capacity of their land appears more than adequate for the present and the next generation.

3.28 *Claim: The EA was flawed in many ways. It failed to consider several important aspects of the project (e.g., the impact on the Aña Cuá Branch of the Paraná river, compensatory reserves, vegetation removal, water table, fish migration, environmental management plans for Encarnación and Carmen del Paraná, lack of baseline environmental data) (Request, paras. 36-38, and 47-51).*

3.29 **Response:** We do not agree with this claim. The Borrower prepared a full EA report under Terms of Reference agreed with the Bank. This EA was undertaken by a group of international consultants (from Argentina, Paraguay and Colombia) which delivered a high class product. The analysis was comprehensive and included: (a) a synthetic analysis of environmental baseline conditions using the wide (but uncoordinated) array of ecological and environmental studies carried out by EBY and other institutions in the area; (b) an assessment of the magnitude, importance and probability of occurrence of all potentially-significant negative and positive impacts; (c) an analysis of alternatives, based on available options; and (d) an integrated Environmental Management Plan, tailored to the most likely reservoir filling schedule, with detailed description of activities, timing, institutional responsibilities and budget. The EA was sent to the Bank prior to the appraisal mission, and an English language executive summary was distributed to the Board. The EA report has been deemed a thorough and complete best-case study by Bank and non-Bank specialists alike, and met all the requirement of the Bank's policies and procedures.

3.30 Public consultations took place during preparation of the EA. The consultants carried out informal consultations with environmental scientists, non-governmental organizations, environmental officials of local and national governments and informed citizens throughout the period of preparation of the EA. When the report was available in draft and before finalization, a formal 3-day consultation was organized by EBY with more than 60 NGOs and representatives of affected populations in Ayolas. The Resettlement Plan was also presented in draft form at this time to all of the participants. Based upon the suggestions and comments received, the EA was revised and finalized.

3.31 *Aña Cuá Branch.* The impacts on this river branch were regarded as the major downstream impact of the reservoir. The management of water quality and quantity along this branch is to be an important component of reservoir operating rules. The construction of three mini-dams downstream from the Aña Cuá spillway will guarantee the permanence of appropriate water levels in the branch. Nevertheless, water quality degradation and other undesirable conditions (e.g., aquatic weeds) need to be monitored in order to send necessary "wash-load" flows downstream to improve environmental conditions in the mini-reservoirs. A minimum "ecological" flow will have to be maintained at any operational level of the reservoir, whether it is operated by EBY or a private sector concessionaire. These issues are being analyzed as part of studies to design the management of water levels and discharges which would be required before operation either beyond level 78 masl or under conditions which would necessitate closing off all spills on the Aña Cuá Branch.

3.32 *Compensatory Reserves.* The EA report identified that "one of the most significant impacts of the project, both in importance and magnitude, will be the permanent loss of wildlands, especially the island ecosystems of Yacyretá and Talavera". It also stated that "the functional capabilities of these ecosystem will cease even at operational level 76 masl". The EA report also identified that the most important measure available for mitigating the loss of natural ecosystems is the establishment of a network of compensatory reserves. Seven reserves totaling more than 100,000 ha were proposed in the EA report as partial compensation for the wildlands lost to the project. These potential areas were identified as ecologically similar to the ecosystems affected by the project. Compensatory protected areas have been established under the Yacyretá project.

3.33 *Migration of Fish.* The potential impact of reservoir development on the fish populations of the Paraná river have been studied for several decades. The EA report fully considered all previous studies and conclusions, and recommended management plans to take into consideration: (a) the inevitable barrier of an existing dam (90% completed when the EA was carried out); and (b) the existence of fish elevators as part of the main civil works of the dam.

3.34 The project's effects on the Paraná river's native fish are varied and complex, but appropriate mitigation measures are being implemented. On the positive side, the overall fish biomass (including that of harvested species) is expected to increase under the project, because: (a) the total fish habitat (freshwater surface area) will expand; and (b) preliminary evidence indicates that the reservoir is a productive fishery habitat (with mostly excellent water quality and other favorable conditions). Furthermore, the Yacyretá dam and reservoir are not expected to cause any of the Paraná river's native fish species to disappear completely from the river (although this can only be confirmed over time with continued scientific monitoring). This favorable prediction is based on the extensive undammed section of the Paraná river below the dam, which native (including migratory) species will continue to utilize and the fact that sections of the Yacyretá reservoir will continue to have "riverine" aquatic characteristics suitable for some species not tolerant of "lake" conditions.

3.35 On the negative side, the dam has resulted in three major adverse impacts. First, the dam is a physical barrier to fish migrations, both up- and down-river. Neither the two existing fish elevators nor any other known technology (e.g., ladders or "trap and truck" facilities), could restore fish migrations to anything resembling natural, pre-dam conditions. While the fish elevators cannot re-establish natural migration patterns, they are nonetheless useful for ensuring that the Yacyretá reservoir has a genetically-diverse breeding stock, by "seeding" the reservoir with many native species from below the dam. Second, two large fish kills occurred below the dam during reservoir filling to level 76 masl, due to gas (primarily nitrogen) super-saturation of the relatively shallow waters below the dam. The gas super-saturation results from the atypical design of the dam's main spillway, which causes excessive aeration of the water. This effect was not anticipated by the EA, because it is a rare phenomenon (not previously known from hydroelectric dams in Latin America). Under the circumstances, EBY is doing everything feasible to minimize gas super-saturation, including: (a) adjusting operation of the main spillway; (b) carefully monitoring dissolved gas levels; and (c) incorporating design changes into the Aña Cuá spillway. As a result of EBY's efforts, visible fish kills are no longer occurring although the gas super-saturation problem will not completely disappear at Yacyretá. Third, large-scale, illegal commercial fishing is common in Paraguayan waters immediately below the dam, where migratory species are highly concentrated and unusually easy to catch. Although EBY has no legal mandate to regulate fishing below the dam and despite the fact that the Paraguayan authorities have been slow to respond, this problem is likely to be solved by the declaration and enforcement of a 1 km security zone below the dam, which would prevent access to most fishing boats (as well as protect the dam from the remote risks of sabotage or terrorism).

3.36 *Water and Sanitation.* Water quality in or near urban areas, and its related potential health risks, was identified as being of the highest importance. Existing deficits in sanitation services (existing sewage collection covers less than 15% of household units) and low circulating waters in lateral urban bays would create unhealthy conditions and cause proliferation of vector diseases. This condition would be exacerbated by endemic mosquito populations and institutional weaknesses of health sector agencies. Maximum risks would be present at the highest reservoir elevations. However, situations similar to pre-impoundment conditions were expected for filling of the reservoir to level 76 masl, and have been confirmed by the vector monitoring programs.

3.37 The EA report established that improvements of basic sanitation services in water, sewerage and sewage treatment, and in solid waste collection and disposal, were a necessary condition for filling the reservoir beyond level 78 masl. EBY has financed new water intakes and treatment plants for Encarnación and Posadas, and is currently building main sewerage collectors, pumping stations and wastewater treatment plants for both cities. The Bank and the IDB have sewerage network and house connection projects for Posadas and Encarnación. The reconstruction of urban infrastructure of affected urban centers will be included in a major study for the feasibility and design of coastal treatment works, which will be financed by the Bank Loan.

3.38 EBY completed a study with the assistance of consultants with respect to Carmen del Paraná. Implementation will be the responsibility of the Paraguayan agency CORPOSANA in coordination with EBY's Technical Department.

3.39 *Claim: A Declaration from NGOs criticizing the EA, sent to the World Bank's President, was unanswered (Request, para. 37).*

3.40 *Response:* Despite an exhaustive search of files and records, no evidence could be found of the receipt of this letter by the Bank, although it seems clear from the evidence presented in the Request that the letter was sent to the Bank. We are continuing with the search of the records.

3.41 *Claim: The Requesters have been informed that the proposed Aña Cuá mitigation plan may not be implemented for lack of funds and/or questions about its technical quality (Request, paras. 41 and 42).*

3.42 *Response:* We believe that the information on which the claim is based is incorrect. A major effect of the project on fish and other aquatic life would be on the Aña Cuá Branch of the Paraná river. This Branch would be subject to annually-recurring desiccation. The mitigation plan for this Branch involves: (a) the construction of three mini-dams downstream from the Aña Cuá spillway, which would retain water during the low flow periods; (b) an environmental monitoring program which would assess water quality and other conditions including aquatic weeds, vectors and fish mortality; (c) operating rules that would allow for minimum "ecological" discharges to the mini-reservoirs and occasional large flushing releases, in order to maintain desirable environmental conditions; (d) relocation of water and sanitation infrastructure; (e) community programs for fisheries and other water uses in the reservoirs; and (f) control of illegal fishing and surveillance. The Borrower has agreed to fulfill the above Environmental Mitigation Plan (part of the REMP) and to ensure that the Aña Cuá Branch will not be left dry at any time before the infrastructure and the plans are in place. We understand that IDB has never questioned the concept of the proposed mini-dams, but wanted to examine other possible options.

3.43 *Claim: Vegetation has not been cleared from the areas to be flooded, as specified in the Environmental Management Plan, in violation of OD4.00, Annex B (Request, paras. 43 and 45).*

3.44 *Response:* This assertion is incorrect. The effect of flooded vegetation on reservoir water quality was analyzed using both qualitative and quantitative methods. These analyses concluded that the relative importance of the flooded biomass on the overall water quality of the reservoir was very low. Most of the flooded biomass is in the form of wetlands and natural grasslands, while standing trees cover less than 8% of the total reservoir area at level 76 masl. At the initial operating level (76 masl), the reservoir surface area covers some 110,000 ha, of which some 52,600 ha correspond to land flooded and 57,400 ha to existing river bed. Of the land flooded, 8,300 ha correspond to standing-tree vegetation, mainly riverine and island border forests (see following table). In

addition to very low values of flooded biomass per unit area (i.e., less than 6 ton/ha compared to 300 - 600 ton/ha for other tropical forests which have been flooded by other reservoirs), the high turnover period (calculated at 3 to 5 days at level 76 masl and 25 days at level 83 masl), the low reservoir height, and river-induced mixing conditions all establish favorable conditions for maintaining adequate water quality in the reservoir.

Flooded Areas at Level 76 masl

Affected Area	ha	%
Standing Vegetation (islands)	5,521	5.0
Standing Vegetation (inland)	2,872	2.6
Grasslands and wetlands(islands)	27,408	24.9
Grasslands (inland)	16,799	15.3
Water surface	57,400	52.2
Total	110,000	100.0

3.45 Even with the low relative importance of flooded biomass on the overall water quality of the reservoir, the EA report identified the need for the removal of vegetation in specific areas where risks of thermal stratification and eutrophication were the greatest. Specific areas for vegetation removal were identified, in order: (a) to improve water quality conditions in low circulating areas, especially in lateral bays near urban and/or resettlement areas; (b) to diminish the potential of aquatic weed entrenchment of standing trees in areas near population centers; (c) to improve access to the reservoir by rural and urban users; and (d) to improve navigation channels. For reservoir filling to level 76 masl, about 2800 ha were targeted for the removal of standing vegetation using slash and burn techniques. Of these, about 2700 ha (33% of the total flooded standing vegetation) were actually removed before flooding to that level. Critical areas to be removed for reservoir filling to level 78 masl have already been identified. These future areas will target lateral bays near urban areas.

3.46 Favorable water quality predictions have been confirmed by extensive monitoring programs including upstream and downstream conditions, which started before the final flooding to level 76 masl and are being carried out by binational teams of universities and research centers. There have been no significant changes in key physical and chemical parameters in the main water body of the reservoir at locations such as Encarnación-Posadas and at the dam site. Initial conditions for oxygen depletion behaved as expected, with a slight dip immediately after flooding but with fast recovery of saturation levels. Although deteriorating water quality conditions in small patches or lateral bays of the reservoir cannot be completely avoided, the removal of vegetation in critical areas has definitely improved water conditions and has not allowed the establishment of aquatic weed populations near populated areas. No bloom of aquatic weeds has been reported in the reservoir area.

3.47 The removal of vegetation prior to flooding is one of the recommended activities included in OD 4.00 Annex B. This policy does not require that all vegetation be removed as a condition for Bank financing but rather that the feasibility of such removal should be determined. The relative importance of flooded biomass in the overall water quality should be weighed against other sources of organic and nutrient loads in the future reservoir. Yacyretá is a typical case where flooded biomass and other reservoir conditions (e.g., height, renovation time, mixing conditions) preclude total vegetation removal as a means to improve water quality. Specific removal in targeted areas is, therefore, a more effective approach allowing for a more efficient use of resources assigned to environmental mitigation.

3.48 In those parts of the Yacyretá Reservoir where biomass removal was not needed to achieve water quality, navigation, mosquito control, or other important objectives, standing dead trees are acceptable (and even desirable) from an ecological standpoint. The underwater portions of flooded trees and shrubs provide shelter and nutrients for many fish and other aquatic life. The emergent portions of flooded trees at Yacyretá are used as roosting or nesting sites by cormorants, herons, kingfishers, swallows, and many other birds.

3.49 *Claim: Variations in the levels of the water table on the Paraguayan side of the reservoir have not been assessed adequately (Request, para. 46).*

3.50 **Response:** This assertion is correct. Water table conditions both for quantity and quality have not been adequately assessed, either on the Paraguayan or on the Argentine side. The EA report addressed this issue; it concluded that there was not sufficient information to assess the potential impacts on groundwater quantity and quality, and recommended that specific hydrogeological studies be carried out in critical areas such as Encarnación and Posadas. The impacts would grow in importance with higher reservoir operating levels. These hydrogeological studies were included as part of the Bank-financed project, but they have not been carried out yet because of procurement delays. The EBY plans to hire consultants in early 1997 with the objective of completing the studies during 1997. This is an important information gap that needs to be addressed before raising the reservoir beyond level 76 masl.

3.51 *Claim: The Banks failed to assess adequately the biodiversity at the Project site before the reservoir was filled. The project destroyed wildlands without establishing adequate compensatory reserves, in violation of OPN11.02, and the creation of reserves has been illusory. Although it is claimed that six reserves have been created, in most cases title has not been acquired and the areas are not being protected (Request, paras. 52 and 55).*

3.52 **Response:** These assertions are incorrect. The biological surveys carried out for the Yacyretá project are described in the EA report and summarized in the EA Executive Summary and the Staff Appraisal Report. They included a thorough review of higher plants, large mammals, birds and reptiles in the project area, and a less detailed review of Paraná river fish species. A comprehensive survey of other life forms (including



invertebrates) in the reservoir area was not done, as it would have taken several years to complete and the information obtained would almost certainly not have been used to change project design or operation. By the time that Ln. 3520-AR was under preparation, the Yacyretá dam was already physically in place and could not be relocated, based on biological or any other environmental data. However, the biological surveys that were carried out proved very useful in identifying compensatory protected areas which have the same ecosystem types and the same or similar species as the areas flooded by the reservoir.

3.53 The Environmental Mitigation Program required under Ln. 3520-AR provides for a system of compensatory protected areas which is fully consistent with the letter and spirit of the Wildlands Policy (superseded by the Natural Habitats Policy, OP 4.04). To date, five new protected areas totaling about 128,000 ha have been legally established under the Yacyretá Project. They comprise:

- (a) five Special Conservation Units (Galarza, Ibera, Itati, Yaguarete Cora, and Camby Reta) totaling 83,000 ha within the Ibera Provincial Reserve (Corrientes, Argentina);
- (b) Santa Maria Provincial Reserve (2,450 ha in Corrientes, Argentina);
- (c) Apipé Grande Provincial Reserve (27,000 ha in Corrientes, Argentina);
- (d) Campo San Juan (5,700 ha in Misiones, Argentina, which is still under private ownership but is legally protected under a "no innovation" decree); and
- (e) the Isla Yacyretá Wildlife Reserve (9,940 ha in Paraguay).

As a group, these reserves encompass all of the ecosystem types (including different kinds of wetlands, native grasslands, and forests) which have been or will be inundated by the reservoir. In compliance with the Natural Habitats (Wildlands) Policy, the combined size of the Yacyretá Protected Areas System (SAPY) is larger than the land area to be inundated when the reservoir is raised to level 83 masl (about 105,000 ha of natural habitats).

3.54 On-the-ground management has been initiated (with financial support from EBY) at the Santa Maria and Isla Yacyretá reserves, which now have physical demarcation and full-time guards. Investments to manage the other above-named protected areas have been delayed because EBY has not yet provided the agreed counterpart funds. However, these other reserves (Ibera, Apipé Grande and Campo San Juan) do not currently face human encroachment or other imminent threats. Nonetheless, satisfactory implementation of on-the-ground protection measures for the Ibera-Galarza, Apipé Grande, and Isla Yacyretá reserves is a pending action required for operating at level 76 masl, which is being implemented as agreed with the Bank. The recurrent costs of managing all of the SAPY reserves (as well as other recurrent environmental mitigation costs) are to be

funded through a special allocation from power sale revenues; this requirement will be made explicit in the privatization bidding documents.

3.55 About 92% of the SAPY land area is in Argentina, while about 75% of the natural land area lost to the reservoir is in Paraguay. This apparent imbalance exists because it has been easier to establish new protected areas on the Argentine side of the river, which has significant tracts of public land (at Ibera and Apipé Grande) and a more favorable land expropriation law (for Campo San Juan). On the Paraguayan side, all the sites examined to date for possible new reserves are privately owned. Except for Isla Yacyretá, EBY's management has consistently declined to purchase land in Paraguay, due in part to concerns about inflated land prices. However, EBY has committed itself to finance essentially all of the costs of protected area establishment and management, other than land acquisition. The Natural Habitats (Wildlands) Policy does not specify what proportions of the compensatory protected areas must come from each country in binational projects.

3.56 Although the western end of Isla Yacyretá has been degraded by dam construction-related activities prior to being established by EBY in March 1994 as a Wildlife Reserve, it is nonetheless an ecologically valuable area, with the only Arary (*Calophyllum brasiliense*) forests and sand dune formations in any of the SAPY protected areas. The problems cited in the Request are being addressed: protected area guards have been hired, the reserve has been demarcated with signs, the Ayolas garbage dump has been closed, and rehabilitation of borrow pits (as wetland ponds or other attractive wildlife habitat) is underway. A major pending action at the Isla Yacyretá Wildlife Reserve is the acquisition by EBY of remaining private lands; this is to be done initially in the portion of the reserve east of the highway, which is relatively wild and where no resettlement is needed. Although the Arary is not a globally-endangered tree species, Arary forests in Paraguay are a rare and threatened ecosystem. The Bank is committed to ensuring that adequate water remains in the Aña Cuá Branch (from sufficient water releases, with or without the three planned mini-dams), so that the Arary forests at Isla Yacyretá will not be damaged by water shortages.

3.57 *Claim: There might have been an impact of the project on cultural property, in violation of OPN11.03, and the Request asks that the Panel evaluate the extent to which policy has been complied with (Request, para. 54).*

3.58 **Response:** Bank-financed systematic field surveys and investigations were carried out for the Paraguay and Argentina sides of the river and for the islands. Archaeological salvage operations were carried out in all islands prior to flooding to level 76 masl. Materials and artifacts have been analyzed and catalogued. Additional surveys (and, if needed, salvage) as well as studies of historic sites in urban areas to be flooded will be carried out prior to filling the reservoir to higher elevations, as defined in the REMP.

**3.59 Claim:** *The systematic disregard for the impact on biodiversity undermines the goals of the Convention of Biological Diversity, in violation of OMS2.36 (Request, para. 63).*

**3.60 Response:** This assertion is incorrect. The Yacyretá project was designed and largely implemented long before the Convention on Biological Diversity was signed in 1992. Implementation since 1992 has done much to support, not undermine, the goals of this Convention, both in Paraguay and Argentina. Project activities which support the Convention include: (a) establishment and management of new protected areas; (b) research and monitoring of many terrestrial and aquatic animal species in the project area; (c) promotion of sustainable fish management, by prohibiting fishing immediately below the dam and by refusing to introduce non-native fish into the reservoir; (d) captive maintenance and re-introduction to suitable riverine habitat of threatened *Aylacostoma* snails; (e) managing of water releases over the dam and spillway to help sustain native fish and other aquatic life by minimizing gas super-saturation and avoiding desiccation of the Aña Cuá Branch; and (f) allocation of power sale revenues for protected area management, fish monitoring, and the other recurrent costs of environmental protection.

**3.61 Claim:** *The Banks have allowed the project to stray off-course, and have allowed the Borrower to delay implementation of the neglected social and environmental components. In addition, the Banks did not exercise their remedies when the Borrower failed to comply with Loan conditions, in violation of OD13.05 and OD13.40 (Request, paras. 64 and 65).*

**3.62 Response:** We agree that there have been delays, but the assertion concerning remedies is based on a misunderstanding of Bank procedures. Commensurate with the nature and complexity of the project, the Bank has supervised the project at least three times a year; as shown in Attachment F, in the past four years, 24 supervision missions have visited Argentina/Paraguay. On average, the Bank has assigned 80 staffweeks per year to supervision of the project, five times the Bank-wide average. Supervision missions have met with interested parties, including the Universities of Buenos Aires, Misiones and Encarnación, Fundación Moisés Bertoni, Fundación Vida Silvestre, as well as the representatives of affected population. Supervision missions have been and are always ready to meet with interested parties during the course of their work and they have done so regularly since 1990. Our records show only one unfulfilled request from Sobrevivencia received while a Bank mission was in the field (November 27, 1995). On this occasion, the mission contacted Sobrevivencia, and its staff apologized for the fact that they were unavailable. It was agreed to meet in the future in Washington and in the field with supervision missions. The Bank met most recently with Sobrevivencia in April and October 1996.

**3.63** In supervision, Bank missions have drawn a clear distinction between the actions related to elevation 76 masl (i.e., current operating level of the reservoir) and those actions required as a pre-condition for raising the reservoir level above elevation 76 masl. The Bank, in close coordination with IDB, ensured that all essential environmental and resettlement actions were complied with before agreeing to raising the reservoir to

elevation 76 masl and commissioning the first generating unit. At this point, the Bank forcefully insisted that the Borrower change the schedule for raising the reservoir in order to allow time to comply, *inter alia*, with the removal of affected population, payment of indemnifications, and removal of biomass. The raising of the reservoir operating level was completed strictly in accordance with the plans agreed with the Bank; EBY and the Borrower were in compliance with the dated covenants in the loan. Some complementary actions were needed, following a review made after elevation of the reservoir to level 76 masl. Some of these actions were not implemented as planned because of the financial difficulties faced by EBY in 1995 and 1996, but are being addressed as described in paras. 2.11 and 3.66.

3.64 With respect to the implementation of actions related to reservoir elevations 78 masl and 83 masl, the Borrower was in non-compliance with dated loan covenants which reflect the initial plan to achieve elevation 78 masl by the end of 1995 and elevation 83 masl by the end of 1998. The Bank's major concern was to avoid the increase of the reservoir level above elevation 76 masl, without strict compliance with the action plan agreed with the Bank.

3.65 Because of the macroeconomic crisis faced by Argentina, the GOA decided to reduce by half in 1995 and to eliminate in 1996 its budget contribution to the project (other than debt servicing), which delayed project implementation and almost stopped execution of the REMP required for elevations 78 masl and 83 masl, as well as implementation of pending resettlement and environmental actions related to elevation 76 masl. At the same time, the GOA and the GOP agreed on a privatization strategy for project completion above elevation 76 masl, that would allow the financing of the REMP required for elevations 78 masl and 83 masl.

3.66 On April 13, 1996, the Bank urged the GOA to agree on a Plan of Action to complete outstanding resettlement and environmental actions related to elevation 76 masl and to inform the Bank on its plans for raising the reservoir above elevation 76 masl. The Bank also informed the GOA that unless a satisfactory agreement was reached with the Bank on these issues, the Bank would have to consider the application of remedies in the Loan Agreement. On April 24, 1996, the GOA confirmed to the Bank its agreement to provide the financial resources to complete pending actions required for raising the reservoir to elevation 76 masl, and its decision to complete the project above elevation 76 masl, in compliance with the REMP, through the privatization of the operation, maintenance and sales of energy of Yacyretá, estimated by the two Governments to be finalized by February 1997. On July 31, 1996, EBY confirmed to the Bank that it had secured funds to finance pending activities related to elevation 76 masl, and that a special account has been established for this purpose. As of October 15, 1996, implementation of these activities was proceeding satisfactorily and in accordance with the plan agreed with the Bank mission on August 16, 1996.

3.67 In view of the Government's positive response in providing funds and quickly starting implementation of the pending actions related to elevation 76 masl, the Bank did not require the exercise of the legal remedies of the Loan Agreement. The exercise of

remedies is a discretionary matter, according to Bank policy, to be used only when other reasonable means of persuasion have failed.

**3.68 Claim:** *Even if the dam were fully operational at level 83 masl, the cost of electricity generated by the project would be more than three times the competitive market price in the region (Request, paras. 6 and 39).*

**3.69 Response:** The claim is correct. However, it is important to understand both the history of the project and the decision-making processes which have been followed in approving successive loans in support of it.

**3.70** The decision to build Yacyretá was taken at the end of a decade which saw two massive crises in energy supplies and prices. There were powerful reasons to view such a project, with heavy capital costs but low operating costs, in a very favorable light. It is extremely important to understand that, under the assumptions prevailing at the time of the appraisal of the Bank's first loan in support of Yacyretá, *the project was the least-cost option for meeting Argentina's electric power needs from 1985 onwards.*

**3.71** The decade of the 1980s was disastrous for Yacyretá. First, there was a three-year procurement dispute between the Bank and EBY. Macroeconomic instability, compounded by the South Atlantic War and its aftermath, resulted in chronic financing problems. EBY itself suffered from severe management problems. Nonetheless, in spite of all the difficulties and delays, the dam was built. The Second Yacyretá Hydroelectric Project was designed to complete outstanding work. When it was appraised in 1992 and Loan 3520-AR was made, *it was part of the least-cost power generation expansion for the period 1992-2000*, where investments already made were considered as "sunk costs" for the purposes of economic evaluation, in accordance with standard economic cost-benefit analysis methodology.

**3.72** In appraising the project for the first loan, the Bank estimated its internal rate of return (IRR) at 14%; however, the IRR is currently estimated at 5.5%. Using a discount rate of 10%, the cost of power generated at level 83 masl would be US\$9.5 per kWh. Two separate sets of forces have reduced the expected rate of return and increased the unit cost of power. On one side, delays<sup>5</sup> and interruptions in project implementation have increased costs and delayed the expected power production from the dam. In addition, the actual capital cost of the project rose by about 20% in constant 1977 price terms, which is not unreasonable for such a complex project with a long gestation period. On the other side, the cost of alternative means of power production (gas-fired combined cycle thermal plants) has decreased in real terms, instead of remaining constant or even increasing as it was projected in the late 1970s.

**3.73** The project was designed to be operated at a reservoir level of 83 masl. Operating it permanently at a level of 76 masl would reduce the energy output by one-third from its

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<sup>5</sup> The first investments were made in 1977 and completion is now expected to be in 2000, a total of 24 years.

designed capacity, with obvious consequences for both unit costs and revenues. Looked at from the point of view of the incremental costs and revenues which would result from raising the level of the reservoir from its present level of 76 masl to 83 masl, a 50% increase in productive capacity<sup>6</sup> can be obtained and the incremental costs of production of energy would be equal to about US\$1.6 per kWh, which is about two-fifths of the cost of the lowest cost alternative.<sup>7</sup> The incremental investment (of US\$760 million, mostly for resettlement and environmental mitigation, as the dam and power generation facilities are substantially in place) would have an IRR of 25% and a payback period of less than three years. The present selling price of energy generated at Yacyretá at level 76 masl is US\$3.3 per kWh, as defined in the 1992 amendment to the Treaty. This is close to the present spot market price in Argentina and is twice the incremental cost of power produced by increasing the operating level of the reservoir from 76 masl to 83 masl.

**3.74 Claim:** *Privatization should not proceed without adequate legal safeguards regarding the reservoir level, monitoring of the impact of the reservoir level on the health and well-being of affected populations and the environment, and environmental impact assessment of the impact of privatization, and the meeting of the minimum standards which have already been violated. There should be an evaluation of the economic rationale behind privatization, and the implications for dam-affected people and the environment. Other alternatives should also be fully evaluated, including dismantling the dam or operating the Yacyretá reservoir at a lower level than the projected 83 masl (Request, para. 67).*

**3.75 Response:** The GOA's strategy is to promote private sector participation in its power sector, and that strategy has the support of the GOP. The Bank's position has always been that the privatization arrangements should be decided by the interested countries, following the consultant/decision process described in the legal documents, and that the Bank would have no objection, in principle, to the privatization of Yacyretá provided: (a) that it would not conflict with the basic objectives of the project; and (b) that implementation of the Resettlement and Environmental Management Plan would be carried out strictly as agreed with the Bank.

**3.76** In compliance with a Loan covenant, EBY hired consultants to study the feasibility of private capital participation in the operation and maintenance of the Yacyretá plant and in the marketing of its energy. Following completion of the study, the sponsoring Governments and EBY agreed with the Bank to proceed in 1995 with the privatization of EBY. On November 22, 1995, the Governments of Argentina and Paraguay signed a Protocol, providing a basic scheme for the contracting of private operators under a 30-year concession arrangement.

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<sup>6</sup> in excess of 6000 GWh per year. This is equivalent to a large power plant of 1300 MW operating at a 50% capacity factor.

<sup>7</sup> The long-run marginal cost of energy from a combined-cycle thermal plant using gas would be about US\$4 per kWh in Argentina.

3.77 The Protocol does not conflict in principle with the basic objectives of the project established in the legal agreements. Because of political difficulties, the plans to complete the procurement process for the concession were postponed from June 1996 to February 1997. The Argentine Senate has already approved the bill, but the Chamber of Deputies in Argentina and the Congress in Paraguay are still divided with respect to the privatization. For this reason, completing privatization of Yacyretá by February 1997 seems unrealistic. If the Congresses approve the Protocol, the Bank will review the bidding documents to ensure: (a) adequate funding for completion of the main civil works; (b) adequate funding of the itemized investment and recurrent costs of all necessary environmental mitigation and resettlement activities; (c) adequate environmental rules for dam and spillway operation; and (d) that further raising of the reservoir's operating level is subject to the compliance with agreements entered between EBY and the Bank, relative to the execution of the REMP.

3.78 There is a clear understanding among all parties involved (the Governments of Argentina and Paraguay, EBY, and the World Bank and Inter-American Development Bank) that the two governments are legally obliged to implement the REMP before further elevation of the reservoir is undertaken, whether operated by EBY or a private sector concessionaire before or after privatization of Yacyretá. Even after privatization, EBY's legal obligation to the Bank to comply with resettlement and environment covenants would persist (the only difference being that such obligation would be met by requiring the private sector to participate in the necessary actions). The bidding documents for the privatization will be approved *ex-ante* by the Bank and concessionaire compliance with the Bank policy-derived resettlement and environmental obligations would be an explicit obligation in the concession contracts between the concessionaire and the GOA, GOP and the EBY. In reviewing the bidding documents, the Bank intends to focus on mechanisms for ensuring concessionaire compliance with such obligations.

3.79 The completion of the REMP to allow operation of the dam at the designed 83 masl reservoir level would be an investment with large economic returns. The privatization strategy proposed by the two Governments includes the establishment of an escrow account for resettlement and environmental mitigation activities, funded from electricity sales by the concessionaire. There is no reason to expect that this concessionaire will attempt to undermine the resettlement and environmental protection agreements entered between EBY and the Bank, which will remain valid until they are fully satisfied. The Protocol gives EBY the control on the execution of the REMP.

3.80 The dismantling of a dam such as Yacyretá would be an extremely costly and complex operation, which would represent a high risk to the environment. The termination of electric energy production would represent an economic loss between US\$500 million and US\$800 million per year, for reservoir levels of 76 masl and 83 masl respectively.

## Yacyretá Hydroelectric Project

## Pending Actions Related to Operating the Reservoir at Level 76 masl

Description	Cost Estimate (US\$'000)	Completion Date
<b>IN ARGENTINA:</b>		
<b>Sanitation:</b>		
(a) Sewage and Water Pumping System - Resettlement Unit 3.2	129	12/97
(b) Water Supply by Trucks-Resettlement Unit 3.2	99	12/97
(c) Construction of Water Tank in Villa Lanus	663	7/97
<b>Reserves and Biodiversity:</b>		
(a) Apipé Island	213	4/97
(b) Galarza	99	4/97
(c) Rincón Santa Maria	55	11/97
<b>Urban Housing:</b>		
(a) Supply of Equipment - Communal Unit (3.2)	1092	6/97
(b) Additional - Project I	159	6/97
(c) Additional - Project II	326	6/97
<b>Rural Housing:</b>		
(a) Santa Tecla (Corrientes Province)-5 houses	48	Completed
(b) Santa Tecla: Water Supply	57	11/96
<b>Equipment Supply:</b>		
(a) Naval Unit (ARG)	40	Completed
(b) Naval Unit (ARG) - Nemesio Parma	40	6/97
<b>Social Development:</b>		
Santa Tecla: Rehabilitation and Productive Program	16	2/97
<b>Brick Making Areas:</b>		
(a) Nemesio Parma: Rehabilitation Program	74	12/96
(b) Nemesio Parma: Productive Units - Drilling Water Wells	70	10/96
(c) Santa Rita: Compensation, small brick-makers (Stage II-Phase II)	379	Completed
(d) Santa Rita: Economic Support (Stage II)	7	10/96
(e) El Porvenir: Electricity Supply, Road Access and Sewerage <sup>1</sup>	0	12/96
<b>Additional Families</b>		
Construction of 61 houses for small brick-makers	204	12/96
<b>Issuance of Titles</b>		
Issuance of property titles	646	4/97

<sup>1</sup> Carried out by the Provincial Government of Misiones.



<b>IN PARAGUAY:</b>		
<b>Indemnifications/Expropriations:</b>		
(a) Reserves on Yacyretá Island	218	1/97
(b) Zone E - Encarnación	4412	1/97
(c) Rural Zones A and D	997	1/97
<b>Reserves and Biodiversity:</b>		
Yacyretá Island	100	9/97
<b>Urban Housing:</b>		
Construction of commercial units, part of the San Pedro housing development.	103	12/96
<b>Rural Housing:</b>		
(a) Construction of infrastructure, drainage, access roads in Atinguy and Caraguatá/Yacarey	100	11/96
(b) Construction of communal facilities in Caraguatá/Yacarey and S. Miguel Potrero	293	1/97
(c) Construction of 28 houses in San Juan del Paraná	247	1/97
<b>Equipment Supply:</b>		
Naval Unit - San Cosme	36	10/96
<b>Industries:</b>		
(a) Drainage System - Stage I: San Pedro	45	10/96
(b) Infrastructure - Stage I: San Pedro	180	12/96
(c) Clay collection for relocated brick makers - Stages I and II: San Pedro	304	1/97
<b>Projects:</b>		
CONAVI - Agreement for preparation of project for 1,750 houses in Arroyo Porá	20	Completed
<b>Social Development:</b>		
(a) Food supply to brick-makers and relocation assistance	1034	12/96
(b) Compensation to small brick-makers	188	Completed
(c) Indemnification - Tile-makers	3201	11/96
(d) Food supply, agricultural assistance, relocation assistance	638	12/97
<b>Additional Families:</b>		
143 Affected Families: 60 families already relocated in the Ita Paso area. <sup>2</sup>	--	12/97
<b>Issuance of Titles:</b>		
Issuance of property titles	450	12/96
<b>BOTH BANKS OF PARANA RIVER:</b>		
<b>Water Weed Control</b>		
Weed control for 1995 and 1996		
<b>TOTAL</b>	<b>16,154</b>	

<sup>2</sup> To be carried out by the Government of Paraguay.

# MATRIX SUMMARY OF THE REQUEST FOR INSPECTION AND THE MANAGEMENT RESPONSE

REQUEST FOR INSPECTION		REFERENCE TO MANAGEMENT RESPONSE (para. #)
Claim	Alleged Violation of Bank Procedures	
1. Even if the dam were to be operated at 83 masl, the cost of electricity generated by the project would be more than three times the competitive market price in the region. (Request, paras. 6 and 39)		3.68-3.73
2. Bank policies which recognize that design considerations, such as lower reservoir levels, can vastly reduce the social and environmental impacts of a project have not been applied in this case. (para. 13)		3.3-3.5
3. There has been inadequate consideration of design alternatives that would involve markedly less social and environmental impacts. (para. 14)		3.3-3.5
4. Basic rights of participation and access to information have been denied. EBY is systematically unresponsive to the concerns of citizens and both governments. The Bank has also been unresponsive and unaccountable. (para. 21)		3.9-3.12
5. The Bank has failed to take financial responsibility for the resettlement of people displaced by the project. (para. 22)		3.6-3.8
6. The Bank failed to incorporate resettlement planning in the design and financing of the project. (para. 22)	OD 4.30, paras. 1, 3 and 24	3.6-3.8
7. The Bank failed to ensure that Argentina or EBY had the institutional capacity to implement a resettlement program. (para. 24)		3.13-3.14
8. The Environmental Trust Fund has not been created, as required under the Loan Agreement. (para. 26)		3.15-3.16
9. Affected people did not have meaningful participation and consultation in the design or implementation of the resettlement plan. (para. 27)	OD 4.30, paras. 3(c) and 8	3.9-3.12
10. The Bank has failed to ensure that people resettled by the project have maintained or improved their standard of living. (para. 28)	OD 4.30, para. 24	3.17-3.18
11. The claimants have not been compensated adequately for the impact on their livelihood. (para. 29)		3.17-3.18
12. The Borrower failed to establish a fair and equitable system of compensation. Many affected families have not received adequate compensation, and many have not been compensated in advance for their losses. The lack of a framework for equitable compensation has deprived them of the ability to negotiate fairly with EBY (para. 31).		3.19-3.20
13. The health impacts of the reservoir were not considered sufficiently in the Environmental Assessment process, and local populations were not consulted adequately. (para. 34)		3.21-3.24
14. The Bank failed to supervise or monitor the Borrower's and the beneficiary's performance concerning the mitigation of health impacts. (para. 34)		3.21-3.24
15. Members of the Mbya Guarani ethnic group lost their traditional territory and their livelihoods changed, when islands in the Paraná river were flooded or transformed. They were not allowed to participate in decisions affecting them, nor were they given any alternatives to choose from. The lands allocated to them are inadequate to support them. (paras. 35 and 36)		3.25-3.27
16. The Environmental Assessment (EA) of the project was flawed; people affected and NGOs did not fully participate. (para. 37)		3.28-3.38
17. A "Declaration" by 13 NGOs criticizing the EA was sent to the President of the World Bank on 7/20/1992, but no reply was received. (para. 37)		3.39-3.40
18. The EA failed to include important aspects of the project (e.g., impact on Aña Cuá branch of the Paraná, compensatory reserves, removal of vegetation). (para. 38)		3.28-3.38

# **MATRIX SUMMARY OF THE REQUEST FOR INSPECTION AND THE MANAGEMENT RESPONSE**

REQUEST FOR INSPECTION		REFERENCE TO MANAGEMENT RESPONSE (para. #)
Claim	Alleged Violation of Bank Procedures	
19. The environmental mitigation plan for the Aña Cuá branch of the Paraná is unlikely to be implemented for lack of funds and/or because it is technically unsound. (paras. 41 and 42)		3.41-3.42
20. Vegetation has not been removed from the areas to be inundated by the dam, as defined in the Environmental Mitigation Plans; this represents a failure by the Bank to supervise the project adequately. (paras. 43 and 45)	OD 4.00, Annex B, para. 5	3.43-3.48
21. Variations in the level of the water table on the Paraguayan side of the reservoir have not been adequately assessed. (para. 46)		3.49-3.50
22. The EA failed to consider adequately the effect of the dam on migratory fish, and therefore was unable to develop mitigation techniques appropriate to the Paraná. (para. 47)		3.28-3.38
23. Adequate Environmental Management Plans have not been developed for the cities of Encarnación and Carmen del Paraná, to assure water quality and avoid public health risks. (para. 51)		3.28-3.38
24. The Bank failed to assess adequately the biodiversity of the project area before allowing the reservoir to fill. (para. 52)		3.51-3.56
25. The Bank may have failed to assist in the protection and enhancement of cultural properties. (para. 54)	OPN 11.03	3.57-3.58
26. The project destroyed wildlands without establishing adequate compensatory reserves. (para. 55)	OPN 11.02	3.51-3.56
27. The creation of compensatory reserves has been illusory. EBY and the Bank claim that six reserves have been created, but in most cases title to the land has not been acquired, and the areas are not being protected. (para. 55)		3.51-3.56
28. The violations of wildlands policy, the failure to survey or preserve biotic information, and the failure to mitigate the adverse effects on fish migration undermine the goals of the Convention on Biological Diversity, to which Paraguay is a party. (para. 63)	OMS 2.36	3.59-3.60
29. The Bank has failed to take an active role to correct problems with implementation of the social and environmental aspects of the project. Rather than change the project to reduce the environmental and social impacts in the light of repeated violations of loan agreements and project documents, the Bank changed the project to allow the borrower to delay implementation of these neglected components. (para. 64)		3.61-3.67
30. The Bank did not adequately exercise its remedies when the Borrower failed to comply with project conditions. The Bank should have suspended disbursements when the environmental and social components were consistently violated. Alternatively, it should have ensured that the Borrower and EBY were adequately implementing the environmental and social mitigation required through direct financing, supervision, and the actual or threatened exercise of remedies. The failure to provide cofinancing and adequately to implement the environment and resettlement programs should have triggered more oversight and monitoring, and the continued failure over many years should also have led the Bank to consider pulling out of the Project. (para. 65)	OD 13.05, para. 4-1 OD 13.40	3.61-3.67

**MATRIX SUMMARY OF THE REQUEST FOR INSPECTION  
AND THE MANAGEMENT RESPONSE**

<b>REQUEST FOR INSPECTION</b>		<b>REFERENCE TO MANAGEMENT RESPONSE (para. #)</b>
<b>Claim</b>	<b>Alleged Violation of Bank Procedures</b>	
31. Privatization should not proceed without adequate legal safeguards regarding reservoir level, monitoring of the impact of the reservoir level on the health and well-being of affected people and the environment, an environmental impact assessment of privatization, and the meeting of the minimum standards which have already been violated. There should be an evaluation of the economic rationale behind privatization, and the implications for dam-affected people and the environment. Other alternatives should be fully evaluated, including dismantling the dam or operating the reservoir at a lower level than the projected 83masl. (para. 67)		3.74-3.80

**Table C.1 Comparison of Potential Impacts at Different Reservoir Operating Levels without Mitigation Measures**

	<b>Level 76 masl</b>	<b>Level 78 masl</b>	<b>Level 83 masl</b>
<b>Water Quality</b>	Similar to existing high flood conditions	Increasingly moderate problems specially in lateral bays	Significant water quality problems in urban bays
<b>Ecological Impacts (natural habitats)</b>	Island ecosystems significantly damaged (52,00 ha of natural habitats flooded)	Island ecosystems lost (64,000 ha of natural habitats flooded)	Island ecosystems lost (105,000 ha of natural habitats flooded)
<b>Archeological Sites</b>	All island sites will be flooded	All island sites will be flooded	All island sites will be flooded
<b>Fish Migration</b>	Blocking of most migrations	Blocking of virtually all migrations	Blocking of virtually all migrations
<b>Health</b>	Similar to existing conditions	Similar to existing conditions; moderate risks	Potentially significant problems in lateral urban bays
<b>Aquatic weeds</b>	Similar to existing conditions	Similar to existing conditions	Potentially significant problems in lateral urban bays
<b>Resettlement</b>	Moderate effect	Moderate impacts	Maximum effect
<b>Infrastructure</b>	Minimum effect	Moderate impact	Maximum effect

**Table C.2 Summary Of Principal Environmental Mitigation Measures  
(for all levels)**

<b>ENVIRONMENTAL IMPACT</b>	<b>MITIGATIVE MEASURES</b>
<b>Water Quality</b>	Selective vegetation clearing in critical areas, especially lateral bays Environmental clean-up of urban bays prior to flooding (closure of septic tanks, removal of waste dumps, removal of vegetation) Sewage collection and treatment systems for urban areas Water quality monitoring (reservoir, upstream and downstream) Water quality simulation through mathematical models Water level and release schedules for water quality control Water quality regulation/effluent control programs in upstream watershed Water level/water quality control Aña Cuá Branch through mini-dams and water discharges
<b>Ecological Impacts (Natural Habitats)</b>	Animal rescue prior to vegetation removal and flooding Establishment of compensatory reserves in areas of similar ecological significance On-the-ground management of newly-created protected areas Live preservation of endemic snail species
<b>Archeological Sites</b>	Archeological surveys and salvage prior to flooding Artifact classification and preservation, and information dissemination Historical sites studies in urban areas
<b>Fish Migration</b>	Operation of fish elevators Fish monitoring in lake and upstream and downstream ecosystems Fish prohibition 1 km below dam
<b>Health</b>	Selective vegetation clearing to minimize establishment of aquatic weed population Vector monitoring and control in area of influence (Plus: all water and sanitation infrastructure, health assistance to resettled population, health programs with local health agencies)
<b>Aquatic weeds</b>	Aquatic weed monitoring and control (plus all water quality and vector measures, treatment of lateral bays in urban areas)
<b>Resettlement and Infrastructure</b>	Resettlement of affected population, social and health assistance, compensation programs, technical assistance Relocation/compensation of businesses and industries/ceramic workers Relocation of infrastructure Reconstruction of urban network Coastal treatment works in urban areas

## Affected Family Choice Among Resettlement Alternatives

Types and Numbers of Affected Families <sup>1</sup>	Resettlement Alternatives Offered	Current Situation
<b>I. Periurban Brick Makers<sup>2</sup> - Total: 761 families</b>		
(102 families)	(a) 0.5 ha plot for production unit, five years of clay trucked into plot, houseplot and house with water, electricity, drainage and sewerage, community buildings, schools, clinic, food for six months, social and technical assistance, grant of US\$2,500 in compensation of lost time and to reinstall production.	All in community of San Pedro, production systems re-established, productivity and income higher than before move.
(96 families)	(b) 1.5 ha plot for production unit with own clay deposits, houseplot and house with water, electricity, drainage and sewerage, food for six months, community buildings, school, clinic, social and technical assistance, grant of US\$2,500 in compensation of lost time and to reinstall production at no cost to the family.	70 production units reinstalled at sites called Nemesio Parma and Campo Bauer, 55 of which are producing bricks; others took possession but found employment in city, while some are raising vegetables and domestic livestock on plots rather than producing bricks; income levels of those re-established here same as before the move.
(62 families)	(c) Assistance in forming Brick Makers Cooperative, communal clay deposit of about 10 ha, individual plots for reinstalling production unit, fleet of two trucks and one tractor to haul clay (original housing not affected, just production units)	All located in Coronel Bogado, full production restored and income levels about the same as before.
(491 families)	(d) Cash payment to compensate for losses (US\$6000 to 16,000), houseplot and house in urban area with water, electricity, drainage and sewerage, schools, community buildings, clinics at no cost to the family.	Not recommended by Resettlement Plan, but local political aspirants convinced these families not to accept resettlement options but demand cash; evaluation reveals about 40% invested in productive assets, some 20% in interest-bearing accounts, about 40% lost to money lenders and thieves.
(10 families)	(e) 7 ha of farm land, houseplot and house with water, electricity, sewerage systems, access to school, clinic and community buildings, food for six months, US\$800 to dig a well and latrine, US\$600 to fence property, fruit tree seedlings, tools, seeds, technical and social assistance at no cost to the family.	Four families farming their land in Santa Tecla, two families living there but working elsewhere, others working elsewhere and rent all or a portion of land allocated; incomes about same as before move.

<sup>1</sup> Figures that appear in parentheses indicate the number of families selecting alternative.

<sup>2</sup> These families are all poor artisans (oleros), who lived in precarious conditions in low-lying, flood-prone margins of the river, and considered at high risk of impoverishment without government resettlement assistance. Industrial ceramics producers (tejerías) are not considered at risk of impoverishment because of their wealth and political power in the region, so the industrialists are provided only cash compensation equivalent to their physical losses, cost of self-relocating their production units, and cost of self-stockpiling ten years of raw materials.

Types and Numbers of Affected Families	Resettlement Alternatives Offered	Current Situation
<b>II. Agricultural Families - Total : 356 families</b>		
(218 families)	(a) 7 ha farm (1,016 ha have been allocated, some 227% more than the farmland flooded), food during transition, provisional wood house to be replaced with permanent one, three years agricultural extension, demonstration plots, inputs of tools, seeds and fertilizer, school, community buildings, clinic, social assistance, cash compensation for crop losses and structures flood (majority were landless before; now 100% have titles to land and house), at no cost to the family.	78 families selected (Antinguy) 59 families selected (San Miguel Potrero) 28 families selected (Caraguata) 23 families selected (Yacarey) 30 families moved to higher ground on own farms and compensated in cash for losses and cost of reconstruction; incomes reported as equal to or higher than before the move; (crop/livestock yields for first year available for soya, corn, manioc, mate, citrus, melons, alfalfa, sugar cane, peanuts, sweet potato, chickens, ducks, turkeys, pigs, cattle and horses; see Scombatti and Carvalho 1995)
(117) families	(b) Cash compensation for crop losses and structures flooded, replacement house in an urban area, with potable water, electricity, sewerage and drainage, telephone, access to existing local public services (e.g., schools) expanded as required, titles to land and house, at no cost to the family.	Farmers who have left agriculture in the past and have urban jobs selected new urban housing in small towns along river, including San Juan del Parana, Damian, San Cosme and Carmen del Parana; incomes unaffected by move as employment is unchanged.
(21 families)	(c) Special case of indigenous Mbya, communal grant of 370 ha of forest land, health clinic, school, community building, electricity, wells, seed (corn, cotton, sweet potato, squash, mate, etc.), tools, technical and social assistance, land title at no cost to the family.	Displaced in 1974, provided land for resettlement at Bank request in 1988, further development assistance provided under Loan 3520-AR; incomes at subsistence level as before land grant.
<b>III. Urban Families - Total: 2,638 families</b>		
(2,349 families)	(a) Urban house lot and house, potable water, electricity, drainage and sewerage, school, clinic, community building, telephone, church, kindergarten, police station, bus terminal, social services, training, ownership titles to new house and land, at no cost to the family.	1,113 are living in (Posadas) Conjunto Habitacional A-1; 762 are living in (Posadas) Conjunto Habitacional A-2.3; 273 are living in (Encarnación) Buena Vista; 201 are living in (Encarnación) San Pedro; Income same as before since occupations not affected.
(289 families)	(b) Cash only compensation for property loss	Families with legal title to houseplot and house flooded by reservoir who choose not to relocate to project resettlement areas, self-relocated throughout the region
<b>TOTAL :3,755 Families</b>		



## ARGENTINA

**YACYRETA HYDROELECTRIC PROJECT - (Loans 3520-AR AND 2854-AR)  
Supervision Plan for FY97**

**Supervision Plans**

The Bank plans for FY97 and FY98 are to supervise the Yacyretá project at least three times a year. For FY97, plans have been scheduled and budget allocated for three missions: August 1996 (mission completed on August 16, 1996); November 11-22, 1996; and April 7-18, 1997. Bank supervision missions will focus on the two major outstanding project components: (a) the implementation of pending actions in the REMP related to level 76 masl; and (b) the implementation of the resettlement and environmental management program above level 76 masl, as agreed with the Bank.

As agreed with Sobrevivencia in our meeting held in the Bank on April 4, 1996, the Bank will invite them to participate in the field supervision mission.

As of October 15, 1996, the undisbursed loan amounts are US\$4.0 million (Loan 3520-AR) and US\$68.5 million (Loan 2854-AR).

**Application of Funds**

Undisbursed funds under Loan 3520-AR will be used to finance consulting services related to environmental and resettlement matters, and transmission lines. Undisbursed amounts under loan 2854-AR will be used to finance: (a) part of the sewage system for the city of Posadas; (b) coastal treatment for levels 78 masl and 83 masl; (c) consultant services for: (i) the Aña Cuá branch, (ii) engineering and supervision of complementary works, and (iii) hydrometereology and sedimentation; and (d) a small component for computer software and hardware. The anticipated disbursement profiles are as follows:

**Anticipated Disbursement Profile  
(US\$ thousand)**

<b>Year</b>	<b>Loan 3520-AR</b>	<b>Loan 2854-AR</b>
1996	1,640	5,000
1997	960	18,000
1998	1,400	20,000
1999	--	15,000
2000	--	10,500
<b>TOTAL</b>	<b>4,000</b>	<b>68,500</b>

Yacyreta II - Supervision Missions

DATE	World Bank Staff	Report Date
<b>As of September 1992</b>		
8/21-9/5	De Franco, Power Engineer	SPN Report - 10/8/92
12/9-12/16	Klockner, Financial Auditor	SPN Report - 12/21/92
10/12-10/26	Dr Franco Partridge, Chief, Env. Unit Nissenbaum, Economist Chang, Sanitary Engineer	Letter to EBY - 11/25/92 BTO - 11/25/92
<b>1993</b>		
1/13-2/1	De Franco Partridge Ledec, Environmental Spec. Mejia, Resettlement Spec. IDB	Aide Memoire
5/17-5/28	Partridge Ledec Mejia Quintero, Water Poll. Spec.	Letter to EBY - 6/15/93 Aide Memoire
6/29-7/2 7/12-7/23	De Franco Klockner Partridge Quintero Ledec	SPN Report - 10/18/93
7/17-7/23	Sanchez, Division Chief	BTO - 8/9/93
No date	Partridge Quintero Ledec IDB	Aide Memoire Aug/Sep. 93
10/10-10/16	De Franco Klockner	Letter to EBY - 9/28/93
<b>1994</b>		
1/24-2/14/94	De Franco Quintero Partridge Ledec	Aide Memoire
3/12-3/16	Partridge IDB	BTO Report - 3/21/94
5/4-5/6	Headquarter Visit by EBY	
5/17-6/11	De Franco Partridge Mejia Quintero	SPN Report - 6/29 Aide Memoire

## Attachment F

	Ledec	
7/22-8/9	De Franco Partridge Mejia	SPN Report - 8/24/94
9/5-9/15	De Franco Klockner	SPN Report - 9/28/94
11/17-11/18	Headquarter Visit by EBY	Letter - 12/2/94
12/7-12/16	De Franco Mejia Quintero	Aide Memoire (Dec. 94)
<b>1995</b>		
3/27-3/31	De Franco Jadrijevic, Power Engineer Klockner	SPN Report - 5/2/95
7/10-7/20	Jadrijevic Klockner Partridge Mejia Quintero Ledec	SPN Report - 8/3/95
10/11-10/13	De Franco	BTO - 11/9/95
11/27-12/7	Nankani, Director Jadrijevic Klockner Partridge Mejia Quintero Ledec	SPN Report - 12/22/95
<b>1996</b>		
3/4-3/6 3/11-3/13	Klockner	BTO - 4/5/96
5/95	Faiz, Chief, LAIU De Franco Jadrijevic Klockner	SPN Report - 6/14/96
8/13-8/16	Jadrijevic	SPN Report - 9/4/96

## Supervision Efforts- Staffweeks and Budget

	FY93	FY94	FY95	FY96	FY97	FY93-96 (Ave.)
<b>Yacyretá Project</b>						
Staffweeks	72.9	81.1	85.1	81.5	9.1	80
Budget	207.3	227.5	235.5	288.5	40	240
<b>Latin America Region</b>						
Staffweeks	15.3	16.8	16.1	15.1	-	16

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# Two Ongoing Action Plans

- **Action Plan A** - (\$16 million): Agreed May 1996 to complete by December 1997 remaining 5% of actions pending from filling the reservoir in September 1994 to elevation 76m. In October 1996 implementation delayed due to lack of funds. Escrow account established in December 1996. Progress has been satisfactory since then. As of January 20, 1997, 60% had been executed and it remains on schedule.
- **Action Plan B** - (\$140 million): Agreed January 1996 to complete by December 1999 works and activities to mitigate negative effects of prolonged operation at elevation 76m. Details and funding to be concluded by mid-April.

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# **Chronology of Events**

- Initiation of operation at level 76m (REMP 95 % completed \$226 million spent) - September 1, 1994

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## **Slow Implementation**

- EBY opens account for REMP and other expenditures - January 1995
- GOA cuts budgetary contribution due to Tequila Effect - May 1995
- GOA and GOP agree on protocol to privatize Yacyreta - June 1995
- GOA 1996 budget excludes contributions to Yacyreta - December 1995

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## **Reinvigorated Implementation**

- GOA agrees to EBY borrowing to finance Plan A (\$16 million) - May 1996
  - EBY opens account for Plan A (initial deposit \$4 million) - August 1996
  - Replenishment of account interrupted with 30% of Plan A completed (\$5 million spent) - October 1996
  - EBY opens Plan A escrow account with automatic funding from electricity sales (initial deposits of \$5.1 million) - December 1996
  - EBY completes 60% of Plan A (\$9.1 million spent, \$4 million remaining in account and \$3 million more to be deposited automatically) - January 1997
  - GOA/EBY/GOP agree to Plan B estimated to cost \$140 million - January 1997
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**PLAN A: PENDING ACTION AT ELEVATION 76M**  
**CONTENT OF THE PLAN**

**(Figures in US\$ million, as of January 24, 1997)**

<b>Indemnification and new property Titles</b>	<b>10.9</b>
( Includes: Unoccupied property, Clay deposits, new titles, etc.)	
<b>Resettlement</b>	<b>2.2</b>
(Includes: Community building, Special housing, etc.)	
<b>Infrastructure</b>	<b>1.7</b>
(Includes: Water tank, protected areas, etc.)	
<b>Social Assistance</b>	<b>1.2</b>
(Includes: Agricultural extension, food subsidies, training, provision of water tanker, etc.)	
<b>TOTAL</b>	<b>16.0</b>

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**Action Plan B: As agreed on January 1997**

**Timetable of Key Decisions**

<b>Key Decisions</b>	<b>Completion Date</b>
Loan Agreement with a Local Bank to finance Action Plan	April 14, '97
Establishment of project management arrangements	March 31, '97
Evidence of establishment of escrow account for Plan B	April 21, '97
Appointment of consultant for monitoring Action Plan	March 15, '97
Agreement on a resettlement program for additional families *	April 15, '97

\* Estimated at US\$20 million

## **Components of Action Plan B: Agreed on January 1997**

**(US\$ millions)**

<b>Works/Actions</b>	<b>Total</b>	<b>Completion Date</b>
Housing and Related Works	15.4	November 1998
Infrastructure and Related Works (Sanitation and Coastal Treatment, etc.)	24.2	December 1999
Consultants: Engineering/Project Management	8.3	August 1999
Indemnification, Reallocation of Families, Property Titles	31.0	May 1999
DOC-Management and Recurrent Costs	12.8	December 1999
Civil Works (Aña Cúa) and Equipment	24.5	December 1999
Sub-Total	116.2	
Additional Families *	20.0	To be determined
GRAND TOTAL	136.2	

DOC = Department of Complementary Works

\* Estimated figure to be confirmed and financing agreed by April 15, 1997



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## **Account for REMP**

### **Loan 3520-AR**

#### **GAL COVENANTS**

- Project Agreement Section 2.12 (c) requires an account by November 1994 to finance REMP exclusively
- Project Agreement Section 2.12 (d) requires that EBY deposit into account:
  - \$18 M in 1995
  - \$60.9 M in 1996 (assumes level 78m)
  - \$101.6 M in 1997 (assumes level 83m)
  - \$20.7 M in 1998 (assumes level 83m)

#### **COMPLIANCE**

- First account opened January 1995, but not exclusive for REMP
    - \$12.4 M applied to REMP in 1995
  - Subsequent account opened in August 1996, but not exclusively for REMP
  - REMP escrow account opened in December 1996
    - \$9.1 M applied to REMP in 1996
-

100 year Flood (82.5m); 82m in 1992.

Figure 1. Urban Sanitation and Flood Conditions in the Patana Flood Plain.

