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Proposed Supplementary Loan
Socialist Republic of Viet Nam:
Phuoc Hoa Water Resources Project

Supplementary Appendix K:
Addendum to the Environmental Management Plan

Asian Development Bank

This is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

ACRONYMS

ADB	–	Asian Development Bank
AFD	–	Agence Française de Développement
AP	–	Affected Person
CPC	–	Commune People's Committee
DARD	–	Department of Agriculture and Rural Development
DHIS	–	Duc Hoa Irrigation System
DMI	–	Domestic, Municipal, And Industrial (water)
DONRE	–	Department of Natural Resources and Environment
DTIS	–	Dau Tieng Irrigation System
EHS	–	Environmental, Health and Safety
EIA	–	Environmental Impact Assessment
EIRR	–	Economic Internal Rate of Return
EMP	–	Environmental Management Plan
FFS	–	Farmer Field Schools
FIPI	–	Forest Inventory and Planning Institute
GHG	–	Greenhouse Gas (emissions)
GPP	–	Grievance Point Person
HCMC	–	Ho Chi Minh City
IA	–	Implementing Agency
IBA	–	Important Bird Area
ICB	–	International Competitive Bidding
ICMB9	–	Hydraulic Project Investment and Construction Management Board
IFC	–	International Finance Corporation
IMC	–	Irrigation Management Company
IPCC	–	Intergovernmental Panel on Climate Change
IPM	–	Integrated Pest Management
JV	–	Joint Venture
LCB	–	Local Competitive Bidding
LGXM	–	Lo Go-Xa Mat (National Park)
MARD	–	Ministry of Agriculture and Rural Development
MONRE	–	Ministry of Natural Resources and Environment
NM	–	Nutrient management
OE	–	Operating Enterprise
O&M	–	Operation And Maintenance
OSDP	–	On Farm And Social Development Programme
PMB416	–	Project Management Board 416
PMU	–	Project Management Unit (ICMB9)
PST	–	Primary, Secondary and Tertiary (canals)
PPMB	–	Provincial Project Management Board
RP	–	Resettlement Plan
RRP	–	Report and Recommendation of the President
SEIA	–	Summary Environmental Impact Assessment
SPS	–	Safeguard Policy Statement (ADB, 2009)
SPS	–	Sanitary and Phytosanitary (Agreement)
TBIS	–	Tan Bien Irrigation System
UXO	–	Unexploded Ordinance
VCD	–	Vam Co Dong (river)
VWRAP	–	Viet Nam Water Resources Assistance Project
WRL	–	Water Resource Law
WTO	–	World Trade Organization
WUG	–	Water Users Group

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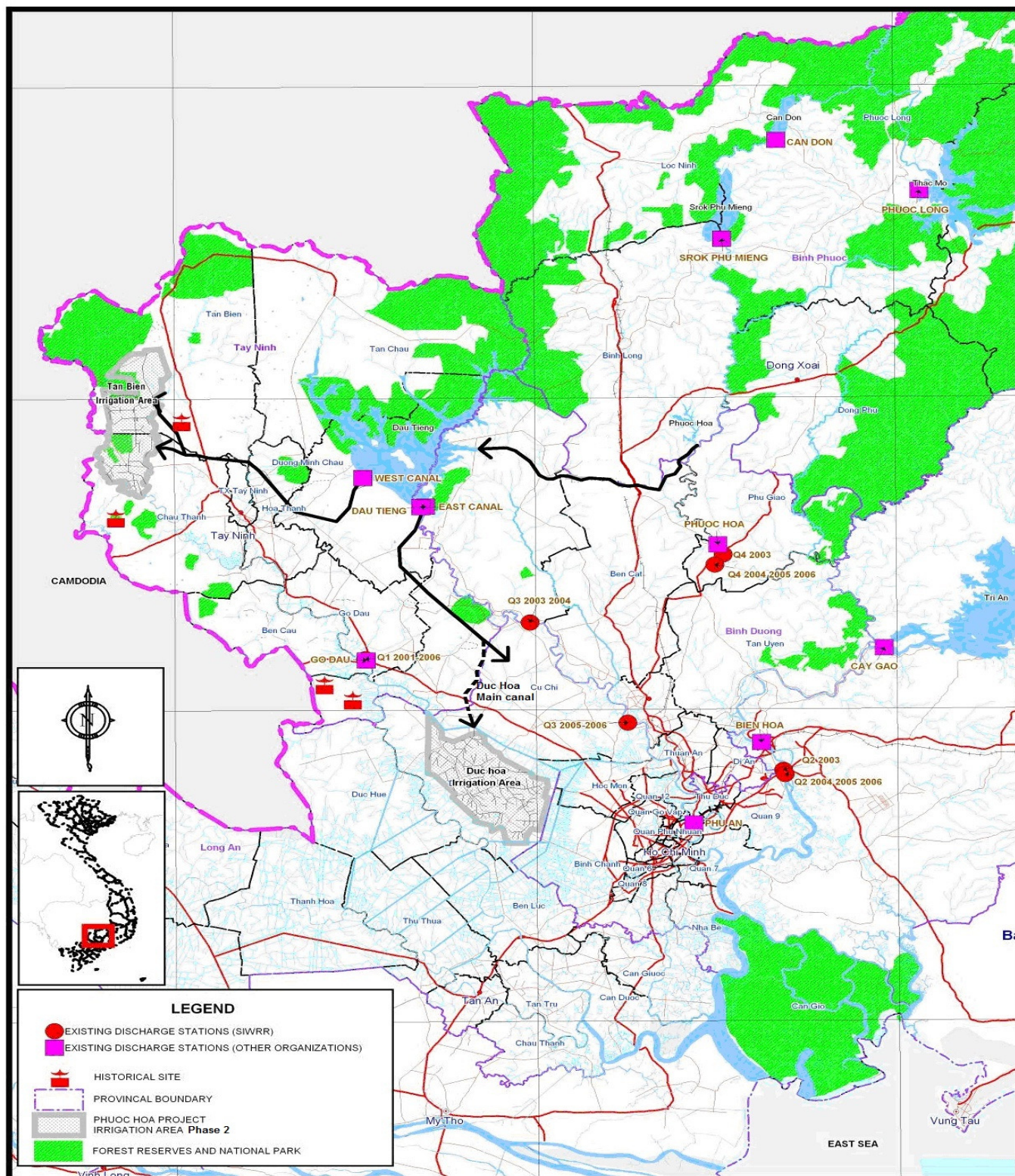
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Appendix B: Example Grievance Input Form



LOCATION MAP - PHUOC HOA WATER RESOURCES PROJECT PHASE 2

SUMMARY

1. Introduction

1. The Addendum to the Environmental Management Plan (EMP) for the Phuoc Hoa Water Resources Project (the Project) is part of preparation for a supplementary loan for completion of the project. The Addendum reviews environmental performance under the original loan and updates the EMP based on the 2009 ADB Safeguard Policy Statement (SPS). Financing is from the ADB Special Funds resources and Agence Française de Développement (AFD). The Investment and Construction Management Board 9 (ICMB9) of the Ministry of Agriculture and Rural Development (MARD) are implementing and executing agencies, respectively, for the Project.

2. The Project has been in development since 1993. Originally conceived by the MARD Hydraulic Project Management Board No. 416, its objectives are to secure raw water supplies to the Saigon and Vam Co Dong basins, to supply water for new irrigation areas, and improve water quality through salinity control in the lower reaches of the Dong Nai and Saigon Rivers. The Project is located in Binh Phuoc, Binh Duong, Tay Ninh and Long An Provinces, with environmental effects also in Dong Nai Province. The Project has two parts: Part A – support for institutional and integrated development, and Part B – Water Resources Infrastructure. Environmental impacts stem from the development and operations of infrastructure (Part B); mitigation measures are administered via the institutional framework under Part A.

3. The Project includes an earth-fill embankment on the Be River, headworks and a 38 km long transfer canal with a capacity of 50 m³/sec to convey water to the Dau Tieng Reservoir located on the Saigon River. The Tan Bien Main Canal is being constructed to provide water to the Tan Bien irrigation area. Construction of the primary, secondary and tertiary (PST) canals for the new irrigation areas of Tan Bien and Duc Hoa (7,670 and 17,600 ha, respectively) and construction of the 17.7 km long Duc Hoa Main Canal are constructed under the second phase of the project (hereinafter referred to as Phase 2), supported under the supplemental loan. Domestic, municipal, and industrial water supply amounting to some 38 m³/sec is provided under the project. The Project utilizes an integrated approach to increase agricultural production through promotion of sustainable water resources management.

4. Two bridging components financed under the original loan will continue into Phase 2: the On-farm and Social Development Programme (OSDP) and contracts for implementation of the EMP. Additional actions under the EMP and further financing under Phase 2 required for full implementation of the EMP are addressed in the Addendum. Design of facilities and establishment of water user groups (WUGs) and irrigation management companies (IMCs) are also financed under the first phase.

5. The Project is classified as Category A on the basis of potentially significant environmental impacts stemming from the damming of the Be River and construction of the Phuoc Hoa Reservoir, potential encroachment on natural forest and legally protected areas by the Tan Bien irrigation scheme, and other impacts and risks. An environmental impact assessment (EIA) was conducted in 2000 as part of the feasibility study and approved by the Ministry of Natural Resources and Environment (MONRE) on 11 March 2008 under Decision No. 399/QD-BTNMT, with conditions similar to those set out in the EMP. The EMP contains 11 annexes that comprise the focus of mitigation and monitoring. These gave rise to 14 EMP implementation contracts that are one focus of the Addendum review. Other issues include screening in respect to the SPS; training requirements for provincial and district staff; institutional arrangements; and a grievance redress mechanism. Since the supplemental loan does not alter the project scope, there is no requirement to submit further documentation in regard to environmental protection to the MONRE for the supplemental loan.

2. Mitigation

6. The mitigation measures reviewed in the Addendum pertain to the potential impacts associated with the preconstruction, construction and operation of facilities financed under Phase 2 of the Project. Four impact issues were addressed specifically in respect to the SPS: impacts and risks on biodiversity conservation and sustainable natural resource management, pollution prevention and abatement, occupational and community health and safety, and physical cultural resources.

Biodiversity Conservation and Sustainable Natural Resource Management

7. The SPS Appendix 1 addresses biodiversity, modified, natural and critical habitats, legally protected areas, invasive species and management and use of renewable natural resources. Both modified and natural habitats and their associated biodiversity are present within the project area. The EMP provides safeguards for protection of these resources. Agricultural biodiversity is protected through training provided by the OSDP and other means. Legally protected habitats, primarily the Lo Go Xa Mat (LGXM) National Park and production forest reserves to the south of the Tan Bien irrigation area, are protected through a buffer zone management program and measures for protection of water quality, which run parallel with ongoing government management plans for the LGXM National Park. The basic objective is to achieve compatibility between irrigation development and natural resource use. The project will not intentionally introduce any invasive species into the area. Sustainable management of renewable natural resources will be achieved through numerous components of the EMP contracts, through development of water user groups and communities (WUG/C) and through the OSDP. MT9 (Annex 12 of the EMP), the Post-EIA Evaluation Programme, is aimed at independent certification of efficacy in EMP programmes and measures. The Project addresses nutrient management through the OSDP and also within workshops provided under MT10. Other training opportunities combining integrated pest management (IPM) and nutrient management are proposed in the Addendum.

Pollution Prevention and Abatement

8. Pollution prevention during construction is addressed through requirements of the construction contractor and in operations by identification of acid sulphate soils and proper application and handling of agrochemicals. Domestic, municipal and industrial (DMI) water supply necessitates means for controlling urban and industrial pollution, and additional assurance from the Government is proposed in this regard. Pollution stemming from pesticide use is generally addressed by training in integrated pest management. Greenhouse gas emissions are roughly estimated to be 39,000 T CO₂-eq annually, representing 0.03% of Vietnam's CO₂ emissions in 2000.

Occupational and Community Health and Safety

9. Occupational and community health and safety are addressed through construction impact mitigation measures, traffic controls and other construction site safety provisions that are written into the requirements for contractors. During the operations phase, IPM provides the means for community health and safety. General training in health and safety in the farm environment will be provided through the OSDP programme and other training channels.

Physical Cultural Resources

10. The EMP concludes there is little need for direct intervention because sites are not in close vicinity of project improvements. Guidelines are set out for design teams and contractors that mitigate impact, including a chance-find protocol.

Summary of Potential Adverse Environmental Impacts

11. The Addendum provides a list of potential impacts and related mitigation measures for Phase 2 and describes each individually in relation to technical details, conditions, designs, equipment descriptions, and operating procedures. These derive primarily from the EMP and mitigation measures are provided through provisions taken during design, the actions of the construction contractors, and EMP contracts.

3. Monitoring and Reporting

12. The Addendum provides a list of monitoring of mitigation measures proposed under the project. Monitoring consists of multi-basin environmental monitoring; project-wide environmental supervision and management; and site-specific environmental mitigation and monitoring. Monitoring is specified within the context of the EMP contracts, which can be generally separated among these programmes. Procedures for monitoring vary widely. Detailed information can be obtained from the EMP and from monitoring reports prepared under the EMP contracts. Reporting includes construction contract monitoring reports and semi-annual reporting that consolidates the results of all EMP contracts.

4. EMP Contracts

13. The EMP Contracts are used to fulfil the requirements for mitigation and monitoring set out in the annexes of the EMP. These contracts are considered “bridging” activities and will extend through Phase 1 and into Phase 2 of the project. Seven EMP contracts are underway and show satisfactory progress. These include contracts for catchment reforestation, and fisheries productivity and biodiversity management, both of which contribute to biodiversity conservation and habitat enhancement described in the SPS. Other ongoing projects (also in early phases) monitor and report on flow and water quality of the project’s rivers to provide a basis for controlling salinity and other water quality variables, distribution of water resources, and provision of data for managing aquatic habitats. A contract for construction impact monitoring has been underway for 20 months with some success in implementation. Some recommendations are made under the supplemental loan for improving performance of construction monitoring. Other EMP contracts already started are considered a qualified success and their extensions to the end of the proposed supplemental loan are included in the project budget.

5. Public Consultation and Grievance Procedure

14. Documentation on public consultation during EIA preparation is sparse. Contract MT10 provides a framework for public consultation during implementation. Two public meetings are held in each province aimed at informing a cross-section of government staff and local people of the project objectives, technical aspects and potential impacts. These workshops should be continued to meet the requirements outlined in the SPS related to consultation and participation. A grievance redress mechanism is proposed for resolution of complaints on environmental performance. The mechanism ensures that the basic rights and interests of affected persons are protected and their concerns during pre-construction, construction and operation activities are effectively addressed. Prior to construction, ICMB9 will appoint a Grievance Point Person (GPP) to handle grievances and to disclose the grievance procedure to local communities. During construction, the Construction Contractor will appoint a person to serve as GPP who will undertake the function. During operation, affected persons may lodge complaints with Subproject-affected commune people’s committees, or the Subproject Irrigation Management Company. The grievance procedure has been disclosed in entirety to the implementing agency and its concurrence gained in use of the procedure at construction sites under the project.

6. Implementation Arrangements

15. The implementation arrangements for the EMP are set up under the prior loan and will be continued into Phase 2. There is an Environmental Unit at ICMB9 that administers the programme. It is supported by an Environmental Specialist within the office of the Supervision Consultant for the ongoing project (Loan 2025-VIE). Work in environmental management is conducted under contract by regional Vietnamese institutions under the supervision of these two groups. The arrangement is consistent with the loan covenant that states “the PMU shall be responsible for implementing the EMP and shall sub-contract this task to an appropriate local institute agreed with the Bank.” Construction contractors are engaged in implementing the EMP as well. Contractors are required to prepare a construction EMP that substantially meets the requirements of the EMP. Contractors are expected to have a person on staff responsible for environmental matters.

Training Programmes

16. Training programmes were developed based on an assessment of training requirements for provincial and district staff in integrated pest management (IPM), nutrient management and watershed and forest protection. The proposed IPM training programme is aimed at “training-of-trainers” and has two objectives: to produce trainers in “Farmer Field School” (FFS) methodology to extend IPM to the field level; and to provide trainers with practical information on producing fruits and vegetables according to international standards, such as those of the World Trade Organization. Nutrient management strategies aim at improving surface water quality and may involve use of buffer zones and set-back limits for agricultural activity and animal husbandry near lakes and rivers. Topics relevant to watershed management and forest protection are being adequately covered by ongoing workshops.

Assurances

17. Assurances incorporated into the original loan related to environmental protection should be carried over, as appropriate, into the supplementary loan. A modification of the loan covenant pertaining to control of wastewater flows extends the assurance to cover all of the project area, not just the Be River.

7. Findings, Recommendations and Conclusion

Findings

18. The EMP provides safeguards for protection of biodiversity, modified, natural and critical habitats and legally protected areas, as well as management and use of renewable natural resources. Invasive species pose no threat since none will be intentionally introduced through the Project. The EMP provides the approach for mitigation of forest loss, encroachment and degradation of biodiversity in these areas. Renewable natural resources management is built into the program through numerous components of the EMP contracts, through development of water user groups and communities (WUG/C) and through the OSDP. Pollution prevention and abatement is addressed during construction through requirements on the construction contractor to abate pollution from its operations. Pollution prevention during operations involves proper application and handling of agrochemicals through training in IPM and nutrient management. Water is supplied for domestic, municipal and industrial (DMI) use requiring a means for controlling pollution from urbanized areas and industry. A modification of an assurance under the original loan from the Government is proposed in this regard.

19. Occupational and community health and safety are dealt with by construction impact mitigation measures, traffic controls in community areas, safety guidelines related to pesticide

use (part of IPM training), and health and safety in the farm environment provided through the OSDP programme. Protection of physical cultural resources is provided for in the EMP through guidelines for design teams and contractors that mitigate direct impact and a chance-find protocol that describes actions by the contractor when historical or archaeological relics are unearthed. Summaries of Impacts, mitigation measures, and monitoring are included in the format specified in the ADB Environmental Impact Assessment Guidelines (2003). Environmental reporting procedures set up under Phase 1 will be continued through Phase 2.

Recommendations

20. Recommendations made in the Addendum can be encompassed in ongoing EMP contracts MT7 and MT10. EMP Contracts Nos. MT7, MT10 and OP4 should be extended to accommodate the anticipated schedule for Phase 2.

21. Recommendations in respect to the performance of MT7 include increasing the presence of the EMP MT7 contractor in the field to improve verification monitoring of contractor's reporting, and report on verification monitoring in separate sections of the report from contractor-produced monitoring data. Recommendations in respect to MT10 implementation include extending the scope to provide public consultation during the implementation phase, facilitating disclosure of the grievance mechanism, and providing training in IPM and nutrient management.

22. Recommendations in respect to the creation and administration of a grievance redress mechanism include facilitating access through appointment of a Grievance Point Person (GPP) in the ICMB9 prior to construction; and including in construction EMPs that contractors will include the grievance procedure in the Site EMP, appoint a GPP under the contractor during construction, and follow the procedure with respect to documenting the grievance; informing the complainant; review, investigation and resolution; and monitoring, reporting and evaluation.

23. Recommendations in respect to training include preparation and presentation of a training-of-trainer's workshop to address integrated pest management (IPM) and nutrient management.

24. Assuming an end date of the Phase 2 Project of June 2014, the proposed contract extensions include: MT7, Construction Environmental Monitoring, for 21 mos (to end of Phase 2), at an estimated cost is \$43,750 plus \$10,000 for scope changes for a total of \$53,750; MT10, Building Capacity, Technology Transfer and Increasing Awareness, for 10 mos (to April 2012), at an estimated cost is \$13,500 plus \$8,000 for scope changes for a total of \$21,500; and OP4, Regulation, Supervision and Synthesis for Packages of Environmental Management, for 9 mos (to end of Phase 2), at an estimated cost is \$5,400.

Conclusion

25. Since there is no change in the project scope, the environmental classification as Category A remains as originally set out; the present Addendum is aimed at assuring compliance with the 2009 Safeguard Policy Statement and providing necessary review in preparation for supplemental lending. Because the supplemental loan does not constitute a "project" under Vietnamese law, there is no requirement to submit further evidence in regard to environmental protection to the MONRE for the supplemental loan.

I. INTRODUCTION

1. This document is an addendum to the Environmental Management Plan¹ (hereinafter referred to as the EMP) prepared for the Phuoc Hoa Water Resources Project (the Project), an update performed in December 2007 of the draft EMP contained as Annex 4 of the Project EIA prepared in 2003.² The referenced EMP was approved by ADB by letter to the Director of the Investment and Construction Management Board 9 (ICMB9) of the Ministry of Agriculture and Rural Development (MARD) dated 28 December 2007. ICMB9 and MARD are implementing³ and executing agencies, respectively, for the Project. The purpose of the addendum is to update the referenced EMP based on the 2009 ADB Safeguard Policy Statement (SPS) in preparation for a supplementary loan in support of the project as described in the following sections. Financing comes from the ADB Special Funds resources and Agence Française de Développement (AFD).

A. BACKGROUND

2. The Project has been in development since 1993 through a series of feasibility studies and support through technical assistance as outlined in Table 1. The 2000 Feasibility Study notes the Project was originally conceived by the MARD Hydraulic Project Management Board No. 416 and sets out its objectives “to secure ample raw water supplies to the Saigon and Vam Co Dong basins in the long term for water supply,” and “will also supply a large area of new irrigation and improve water quality in the lower Vam Co Dong.” Salinity control in the lower reaches of the Dong Nai, Saigon and Vam Co Dong Rivers emerged as a further objective of the Project.

Table 1: Evolution of Project Design and Approval

<i>Year</i>	<i>Document</i>	<i>By</i>	<i>Approved</i>	<i>Decision</i>	<i>Date</i>	<i>Remarks</i>
1993	Concept	??	Yes	??	1993	Early concept studies by Government
1997	PFS report	HEC-2	??	??	Jun-97	Pre-feasibility study report
1997	FR PPTA	WCSC	Yes	N/A	Jun-97	ADB PPTA 2575-VIE done by Water Consulting (Aust)
2000	FS report	BVI	Yes	N/A	Dec-00	ADB Loan 1598 VIE (sf) for consultancy done by BVI
2002	Decision	MARD	Yes	3084 QD/BNN-XDCB	1-Aug-02	Approved FS of Phuoc Hoa Project
2003	Decision	MARD	Yes	4401 QD/BNN-XDCB	6-Oct-03	Approved amendments to FS of Phuoc Hoa Project
2003	Decision	MARD	Yes	4425 QD/BNN-XD	7-Oct-03	Approved resettlement plan for Phuoc Hoa Project
2004	Design	HEC-2	Yes	N/A		Dau Tieng transfer canal technical design
2004	Design	HEC-2	Yes	N/A		Tan Bien Main canal technical design
2005	Decision	MARD	Yes	571 QD/BNN-XD	16-Mar-05	Approved FS and cost estimates for Dau Tieng transfer canal

3. The Project is located in Binh Phuoc, Binh Duong, Tay Ninh and Long An Provinces. Environmental effects from the diversion of water of the Be River affect Dong Nai Province; therefore it is considered also in the project affected area.

B. THE PROJECT

4. The Project has two parts: Part A – support for institutional and integrated development, and Part B – Water Resources Infrastructure. Environmental impacts stem from the development and operations of infrastructure (Part B); mitigation measures are administered via the institutional framework subsumed under Part A.

¹ Environmental Management Plan, ADB Loan No. 2025-VIE (sf); revised December 2007; Black & Veatch International in association with Vina Mekong.

² Environmental Impact Assessment for the Phuoc Hoa Water Resources Project >>>

³ Other implementing agencies include the Provincial Project Management Boards (PPMBs) in the provinces of Binh Phuoc, Binh Duong, Tay Ninh, and Long An.

Specifically, Component A4 Environmental Management contains the implementation of the EMP.⁴

5. The Project includes an earth-fill embankment on the Be River, headworks and a 38 km long transfer canal with a capacity of 50 m³/sec to convey water to the Dau Tieng Reservoir located on the Saigon River. The Tan Bien Main Canal is being constructed as an offshoot of the existing West Canal, built under the Vietnam Water Resources Assistance Project (VWRAP), extending from the Dau Tieng Reservoir to the existing Dau Tieng Irrigation Area. Under the Phuoc Hoa Project, water will be supplied for various purposes: domestic, municipal, and industrial (DMI) use; salinity control via releases to the Saigon and Vam Co Dong rivers; and irrigation water for the existing Dau Tieng Irrigation System and new areas to be developed under the Project. The Project utilizes an integrated approach to increase agricultural production through promotion of sustainable water resources management. DMI allocations by province and minimum flows for salinity control in rivers are shown in Table 2.

Table 2: DMI Allocations and Minimum Flows for Salinity Control

<i>DMI</i>	<i>Consumption (m³/s)</i>
Binh Phuoc	5
Binh Duong	15
Tay Ninh	3.5
Long An	4
HCMC	10.5 (from Saigon River)
<i>Salinity Control</i>	<i>Minimum Flow m³/sec</i>
Song Be River	14
Saigon River	16.1
Vam Co Dong River	?

6. Cost overruns have led to a phased approach for completion of the project. The remaining funds under the existing loan will be used to complete development of the basin transfer component, and the development of irrigation areas are to be financed through supplementary loans from AFD and ADB under a second project phase, which the present addendum of the EMP addresses.

7. The second phase of the project (hereinafter referred to as Phase 2) entails development (construction) of the primary, secondary and tertiary (PST) canals for the new irrigation areas of Tan Bien and Duc Hoa (7,670 and 17,600 ha, respectively) and construction of the 17.7 km long Duc Hoa Main Canal, an offshoot of the East Canal built under the VWRAP Project that extends from the Dau Tieng Reservoir roughly paralleling the Saigon River.

8. The Duc Hoa Main Canal Subproject includes 278 structures to accommodate drainage, a river crossing (inverted siphon) and access across the canal, the latter consisting of 28 bridge spans and road culverts. The width of the canal is 7 m with a depth of 3.3 m. Total land taken for construction of the canal is 118 ha, of which 116 ha will be compensated, and the balance is public land.

9. Preliminary design information for Duc Hoa Irrigation System Subproject gives 29 km of primary canals, 71.6 km of secondary canals and 113 km of tertiary canals. Canal structures include 138 offtake structures, 112 drainage culverts, 28

⁴ Project Administration Memorandum, Loan No. 2025-VIE (sf); Phuoc Hoa Water Resources Project; ADB, September 2004.

road culverts and bridges, and 11 spillways. Land taken for construction of the system is 482 ha, of which 423 ha will be compensated, and the balance is public land.

10. The Tan Bien Irrigation System Subproject consists of both gravity and pump irrigation areas. Preliminary design information for the gravity component gives 39 km of primary canals, 42 km of secondary canals and 45 km of tertiary canals. Canal structures include 423 offtake structures, 125 drainage culverts and 28 road culverts, bridges and spillways. Total land taken for construction of the system is 135 ha, which needs to be compensated.

11. Two bridging components financed under the original loan that will continue into Phase 2 include the On-farm and Social Development Programme (OSDP) and contracts for implementation of the EMP. Additional actions under the EMP and further financing under Phase 2 required for full implementation of the EMP are addressed in later sections. Design of facilities and establishment of water user groups (WUGs) and irrigation management committees (IMCs) are also financed under the first phase.

C. ENVIRONMENTAL CATEGORY

12. The Project has been classified as Category A on the basis of potentially significant environmental impacts stemming from the damming of the Be River and construction of the Phuoc Hoa Reservoir, potential encroachment on natural forest and legally protected areas by the Tan Bien irrigation scheme, and other impacts and risks. Since there is no change in the project scope, the environmental classification remains as originally set out; the present addendum is aimed at assuring compliance with the 2009 Safeguard Policy Statement and providing necessary review in preparation for supplemental lending.

D. EIA AND EMP

13. Documents related to environmental assessment and key milestones and decisions made by the Government are profiled in Table 3. An environmental impact assessment (EIA) was conducted in 2000 as part of the BVI feasibility study. A second EIA was prepared in 2003 that was approved by the MONRE with the provision that a further detailed EIA be conducted prior to final design. This EIA, dated 12 May 2007, with later revisions in 2007 including revisions to the EMP, was approved by the Ministry of Natural Resources and Environment (MONRE) on 11 March 2008 under Decision No. 399/QD-BTNMT. Various conditions were attached to the notice of approval that reaffirms the conditions set out in the EMP. The Decision is reproduced in translation in Appendix A of this report. The EIA contains 11 annexes that comprise the focus of mitigation and monitoring. These gave rise to 14 EMP implementation contracts that are one focus of the present review (see Sec. A).

Table 3: Environmental Documentation

<u>Year</u>	<u>Document</u>	<u>By</u>	<u>Approved</u>	<u>Decision</u>	<u>Date</u>	<u>Remarks</u>
1997	Scoping EIA	WRCS	unknown	N/A	1997	Prepared under PPTA 2525-VIE
2000	EIA	BVI	unknown		Dec-00	EIA prepared under Loan 1598-VIE
2001	EIA	BVI	Yes		Aug-01	Final of previous EIA
2003	EIA	CPO	unknown		Mar-03	Revision of previous EIA with draft EMP
2003	Suppl EIA	CPO	unknown		Oct-03	Supplemental EIA in support of previous document
2003	Comments	MONRE	N/A	3001/BTNMT-TD	28-Oct-03	Comments on earlier EIA work
2003	Request	CPO	Yes	1815/2003/QD-BTNMT	21-Nov-03	Requested detailed EIA prior to final design
2004	Request	ADB			17-Feb-04	Requested detailed EIA prior to loan
2005	Decision	MARD	N/A	1437 QD/BNN-XD	21-Jun-05	Selection of ENTEC to prepare detailed EIA
2006	EIA	ENTEC	unknown		2006	Evaluated EIA prepared under ADB Loan
2006	Review of EIA	BVI	N/A		2006	Prepared under Loan 2025-VIE
2007	Decision	MONRE	N/A	unknown	12-May-07	Response of Appraisal committee to 2006 EIA
2007	EIA	ICMB9	Yes	unknown	Sep-07	Updated in response to earlier MONRE comments
2007	EMP	BVI	No		Sep-07	Revision of Annex 4 of the 2003 EIA
2007	EMP	BVI	Yes		Dec-07	Revision of previous EMP per ADB comments

E. APPLICABILITY FOR REVIEW OF SUPPLEMENTAL LOAN

14. The ADB requires that the proposed activities and EMP be reviewed and updated where necessary for Phase 2 activities that will be financed by the supplementary loan. If changes are required, the revised EMP should be submitted to ADB, MONRE, and MARD for review and approval.

15. Key issues that have been highlighted for review include: (from the TOR)

- applicability of the ADB 2009 Safeguard Policy Statement (SPS) with emphasis on impacts and risks on biodiversity conservation and sustainable natural resource management, pollution prevention and abatement, occupational and community health and safety, and physical cultural resources⁵;
- training requirements for provincial and district staff for integrated pest management, nutrient management and watershed and forest protection;
- institutional arrangements; and
- a mechanism to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance.

16. The results of the analysis are to be incorporated into an addendum that updates the EMP, the present report. Appropriate summaries are to be included in the Report and Recommendation of the President (RRP) for the supplemental loan, with the addendum included as a supplemental annex to the RRP.

17. Vietnam's National policy and procedures regarding environmental impact assessment are based on the 2005 Environmental Protection Law, which superseded a law under the same name promulgated in 1993. The 2005 law covers environmental standards, EIA procedures, general issues related to utilization of natural resources, environmental protection activities in manufacturing, business and services, urban and residential environment, aquatic environment, waste management, emergency response, environmental monitoring and international relations.

18. EIA policy and procedures are described in prime ministerial decrees and other instruments pursuant to the 2005 Law. Decree 80/2006/ND-CP provides guidance on EIA procedure and a list of project types that require preparation of EIA. It also assigns to Provincial Level People's Committees responsibility to organize ap-

⁵ In regard to these issues, the WB/IFC Environment, Health and Safety Guidelines are to be used.

praisal councils or appoint appraisal service organizations to review EIA reports prepared for investment projects within their localities. Decree 21/2008/ND-CP amends and supplements a number of articles of Decree 80/2006/ND-CP.

19. The supplemental loan does not constitute a “project” under Vietnamese law since there is no change in scope, or alteration of other project essentials (proponent, implementing agency or schedule), or change in the content of the EMP. There is hence no requirement to submit further evidence in regard to environmental protection to the MONRE for the supplemental loan.

II. MITIGATION

20. The mitigation measures reviewed herein pertain to the potential impacts associated with the preconstruction, construction and operation of facilities financed under Phase 2 of the Project.

1. Critical Impact Issues Raised in SPS 2009

21. ADB safeguard policies have changed since the issuance, review and approval of the EMP in 2007, which provides the reasoning behind the present review. Compliance needs to be assessed in respect to the 2009 ADB Safeguard Policy Statement (SPS) in which Appendix 1 addresses safeguard requirements for environment. The following sections address four impact issues within the SPS Appendix 1, though the issues have already been addressed at least in part in the 2007 EMP.

1.1.1 Biodiversity Conservation and Sustainable Natural Resource Management

22. Section 8 of the SPS Appendix 1 addresses biodiversity, modified, natural and critical habitats and legally protected areas as well as invasive species and management and use of renewable natural resources. Both modified and natural habitats and their associated biodiversity are present within the project area. The EMP provides safeguards for protection of these resources.

2. Modified Habitats

23. The project introduces more intensified agricultural practice into areas already in cultivation. While there are potential negative impacts from heightened use of agrochemicals, modified habitats will not be degraded. Still there are enhancements that can be achieved by maintaining tree lines, hedge and fence rows adjacent to roadways and dividing agricultural plots. Tillage methods can reduce impact on soil structure and fertility. Addition of organic manure and vegetable litter improve soil texture. Agricultural biodiversity is addressed in the WB/IFC *Environmental, Health and Safety Sector (Agriculture) Guidelines*. Impacts may stem from loss of genetic variation, use of genetically modified seeds, and increase in invasive species. A number of recommendations regarding agricultural biodiversity are provided in the *Guidelines* that should be incorporated into training through OSDP and other channels. Success depends on instilling an appreciation for the benefits of agricultural biodiversity among local communities.

3. Natural and Critical Habitats and Legally Protected Areas

24. Legally protected habitats in the project area include, primarily, the Lo Go Xa Mat (LGXM) National Park and, secondarily, production forest reserves Nos. 67 and 68 in Phuoc Vinh Commune in the south of the Tan Bien irrigation area. These are located in Tay Ninh Province. LGXM National Park, and to a lesser extent the production forests, are important as regionally intact lowland forest habitats, of which there are few remaining in Southeast Asia. The area comprising LGXM National Park

has been designated as an Important Bird Area (IBA) by Birdlife International due to the presence of five bird species classified as near-threatened or vulnerable. Four of these five species are globally threatened, and three are range- or biome-restricted. These species are harboured in the wetlands found within the Park.

25. Assessment of impacts on the LGXM National Park and the Phuoc Vinh forest reserves was conducted throughout project development and in participation with ADB. The final EIA concludes that impacts can be mitigated through proper planning and enforcement. Hence the ADB and Government included a requirement in the loan agreement that protective measures for the Lo Go Xa Mat National Park and forest areas in Tan Bien district be strengthened, a buffer zone management program for the National Park be implemented, and various measures be put into place for protection of water quality in and adjacent to the park.

26. Annex 1 of the EMP provides the approach for mitigation of forest loss, encroachment and degradation of biodiversity in these areas. The proposal is for development and implementation of the *Tan Bien National Park and Forest Protection Programme*. The objective for the national park is to implement a community-based buffer zone conservation and development plan and in-park biodiversity and habitat monitoring and conservation management. Annex 1 also provides institutional strengthening, database development and community awareness as the primary means for protection of production forests in the south of the Province. Annex 1 and the related EMP Contract are described in greater detail in Sec. 2.

27. The planning activities would run parallel with ongoing government management plans for the LGXM National Park. These include a park management plan for 2003-07 (see Sec. 2) and buffer zone planning in conjunction with nearby communes of Hoa Hiep, Thanh Tay and Tan Binh, in which the buffer zone is located. A government sponsored buffer zone investment project has been proposed that involves community forest management, development of livelihood activities including plantation forestry, aquaculture and animal husbandry. "Soft" population restrictions would be placed on these communes and social development/awareness activities conducted involving improvements in water supply and rural roads, education in forest and biodiversity protection, and agricultural extension. Birdlife International also has expended funds for conservation management planning that involves an ecosystems approach for conservation of wetlands and grasslands and other initiatives (see Annex 1 of the EMP for a full description).

28. The EMP addresses impacts on these important habitats by means of the conservation management planning laid out in Annex 1. Direct and cumulative impacts during operations are mitigated through this effort, as indicated in the EMP in the list/tabulation of impacts and mitigation measures. This list includes such actions as designing the PST system for TBIS to avoid encroachment on protected forests and the park. Irrigation in the buffer zone is allowed by the national rules; however Annex 1 contains means for mitigating adverse effects via alternative livelihoods, population controls and community-based sustainable forest management. Construction impacts on forest resources are also mentioned in the list (see Sec. A), and contractors and their workers are barred from harvesting forest resources for whatever purpose. The basic objective of these efforts is to achieve compatibility and co-existence between irrigation development and the adjacent natural resources.

4. Invasive Species

29. The project will not intentionally introduce any invasive species into the area. Species of trees typically planted in plantation forests in Vietnam, fruit trees and other types of crops and vegetables that are typically grown in agricultural settings and that

impart beneficial uses to people will be cultivated. While these plants may not naturally occur in Vietnam, their use is well established. Such species do not blindly propagate and cause damages such as is the case with invasive species. Invasive species must be “widespread” in the sense of rapidly propagating and found to cause harm, which is counterintuitive with the concept of plants cultivated for beneficial use and for commercial purposes.

5. Management of Natural Resources

30. SPS Appendix 1 states that renewable natural resources will be managed in a sustainable manner and where possible, the borrower will demonstrate the sustainable management of resources through an appropriate system of independent certification. Sustainable management is built into the program through numerous components of the EMP contracts, through development of water user groups and communities (WUG/C) and through the OSDP. MT9 (Annex 12 of the EMP), the Post-EIA Evaluation Programme, is aimed at independent certification of efficacy in EMP programmes and measures. This programme picks up and runs for two years from the onset of the operations phase.

31. The WB/IFC *Environmental, Health and Safety Sector (Agriculture) Guidelines* describe problems related to nutrient management and its effect on water quality, specifically eutrophication of natural water bodies. The Guidelines recommend that “strategies should be implemented as part of an INM [integrated nutrient management] approach that aims to prevent, reduce, or control contamination of ground-water resources and eutrophication of surface water resources from runoff and leaching of excess crop nutrients.” Of course training in cropping technique is an open-ended proposition; however the Project addresses nutrient management through the OSDP and also within workshops provided under MT10 (see Sec. 7). Other training opportunities combining integrated pest management (IPM) and nutrient management are proposed in Sec. A. The recommendations found in the Sector Guidelines should be specifically included in training provided by the Project.

6. Pollution Prevention and Abatement

32. Sec 9 of the SPS Appendix 1 addresses pollution prevention, resource conservation and energy efficiency; wastes and hazardous materials; pesticide use and management; and greenhouse gas emissions during the design, construction, and operation of the project. In general these issues are covered sufficiently in the present EMP as noted in the following paragraphs.

33. Pollution prevention during construction is addressed through requirements of the construction contractor to install and maintain systems at worker camps, equipment yards, and construction sites consisting of sanitation and solid waste handling/disposal systems, waste oil spill prevention, and identification and sequestering of acid sulphate soils that might be unearthed during the course of construction.

34. Pollution prevention during operations relies on similar identification of acid sulphate soils, under Annex 9 (included in MT 6) in the development of irrigated areas in Long An and in proper application and handling of agrochemicals, addressed in a later paragraph. Because some of the available water supply will be provided for domestic, municipal and industrial (DMI) use, some consideration is necessary on means for controlling pollution from urbanized areas and industry. Additional assurance from the Government is proposed in this regard (see Sec. B).

35. Resource conservation and energy efficiency is built into the project through the design of the system, which utilizes gravity flow wherever possible to reach irri-

gated land, with only small areas requiring pumped irrigation where there is no alternative. It is up to the construction contractors to minimize energy use and conserve materials, actions that occur as a matter of course in order to reduce expense.

36. Pollution stemming from pesticide use stems from disposal to the soil of waste quantities, overuse and improper application and reuse of empty containers. These topics are generally addressed in training in integrated pest management (see Sec. A).

37. Greenhouse gas emissions stemming from the Project derive from a variety of factors that may be considered in aggregate as the “production system”, which can include types of crops and watering cycle, applications of fertilizer and pesticides, pumped or gravity flow delivery of water, duration and timing of submergence/ drainage in relation to application of fertilizer, soil types and treatments, equipment (or draft animals) used in turning the soil, and productivity. Few of these variables are known for the areas to be irrigated within the project.

38. One study⁶ estimated and compared greenhouse gas (GHG) emissions from rice farming due to farm inputs (irrigation systems, farm machinery, fuels, agrochemicals and animal labour) in Pakistan, the Philippines, China, Indonesia, Myanmar and Nepal. Agrochemicals contribute the greatest share of emissions from these sources (2/3rds of the total). Emissions from tubewell irrigation systems were the highest, followed by canal and rainfed irrigation systems. GHG emissions from canal-fed systems among the developing countries inventoried average 1,100 kg CO₂-eq/ha.

39. Up-scaling methane emissions from rice fields pose a challenge to researchers with many sources of uncertainty in the input data for models, uncertainties that are unlikely to be resolved in the near future. The Intergovernmental Panel on Climate Change (IPCC) reports that “for continuously flooded rice, a ‘model’ average seasonally integrated emission rate for rice-growing countries of the world was estimated from existing data . . . to be 20 g/m². These flux values are representative of flooded rice fields where organic fertiliser is not used.”⁷ Sandy soils prevalent throughout the Phuoc Hoa irrigated area may produce significantly less methane.

40. Considering irrigated land will be planted 35%⁸ in rice, all irrigated land is “canal fed”, other sources of GHG emissions from the Project are insignificant in comparison to those counted below, use of average values provided above, and other assumptions, the Project is roughly estimated to produce CO₂-eq emissions of 39,000 T annually, which represent 0.03% of Vietnam’s CO₂ emissions in 2000. Many assumptions have gone into this model which provides an order of magnitude estimate only. Also, the calculation does not account for GHG emissions from the land area that would occur “without” the Project, which logically should be subtracted from the total amount to arrive at a net increase.

⁶ http://eprints.usq.edu.au/4972/1/Maraseni_Mushtaq_Maroulis_Publ_verison.pdf.

⁷ Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs6c.html>.

⁸ This is based on current crop projections. Figures are available for methane production from irrigated rice, but not so readily for other crops.

Table 4: GHG Emissions from Phuoc Hoa Project

Seasonal Emissions	
<i>Methane flux from rice fields</i>	
Rough average of CH ₄ (gm/m ²)	20
kg/ha	200
CO ₂ -eq (kg/ha) (f-21)	4,200
Production Inputs (kg CO ₂ -eq/ha)	1,100
Unit kg CO ₂ -eq/ha (both sources)	5,300
Total seasonal planted area (ha)	21,000
% planted in rice	35%
Total CO ₂ -eq (annual, T)	39,000
Total GHG Vietnam (2000, T)	143,000,000
% from Project	0.03%

7. Occupational and Community Health and Safety

41. Occupational and community health and safety are addressed in Sec 10 of SPS Appendix 1. The WB/IFC *Environmental, Health and Safety General Guidelines* and the *Sector Guidelines for Annual Crop Production* are applicable to this topic. IFC General Guidelines are applicable primarily to industrial facilities and related environmental issues. Some recommendations are transferable to construction activities as conducted on the Phuoc Hoa Project; these are adequately dealt with by construction impact mitigation measures set out in Annex 1 of the EMP and listed in Table 5 (see Sec. A). For instance the EHS Guidelines specify a potable water supply, clean eating area, adequate lighting, lavatories and showers and safe access that are requisite for workers at permanent industrial and manufacturing facilities; appropriate adaptation of these standards are found in the requirements for worker facilities at construction sites on the Project.

42. Community safety under the *General Guidelines* relates primarily to building codes that reduce risk of injury and accident to the public, covering subjects such as fire prevention, suppression and control, access and egress, emergency response planning, alarm systems and building codes. Community safety on the Project concerns traffic controls through flagging and enforcement of speed limits, erection of barriers around work areas to exclude access and other construction site safety provisions that are written into the requirements for contractors.

43. The *Sector Guidelines* provide more specific advice for irrigated agriculture projects in the operations (production) phase. One topic is pesticide use, application of integrated pest management (IPM), and safety concerns related to the application, handling and storage of pesticides. Recommendations are made concerning introduction of IPM in the Project area through training (see Sec. A). Health and safety in the application, handling and storage of pesticides are commonly included in any such training module. The recommendations found in the *Sector Guidelines* should be specifically included in training provided by the Project.

44. Other types of health and safety hazards described in the IFC *Sector Guidelines* include physical hazards posed by equipment and working in confined spaces, air emissions from agricultural activity, chemical hazards (including pesticides) and fires and explosion. General training in health and safety in the farm environment should be provided through the OSDP programme and other training channels. Community health and safety parallel occupational issues.

8. Physical Cultural Resources

45. Item 11 of SPS Appendix 1 addresses the need for preservation of physical cultural resources. Sec. 6.3 of the EMP lists historical sites in the project area and concludes there is little need for direct intervention for preservation actions, because sites are not in close vicinity of project improvements. Guidelines are set out in the EMP for design teams and contractors to follow, which mitigate direct impact. A chance-find protocol is included in Annex 7 of the EMP that addresses actions to be taken by the contractor in the event historical or archaeological relics are unearthed.

A. SUMMARY OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS

46. Table 1 of the EMP forms the basis for the current list of impacts for Phase 2; direct impacts identified in the original EMP that are related exclusively to the physical works financed under Phase 1 are not included in the current list (see Table 5). Both mitigation and monitoring were addressed through a series of annexes in the EMP, which are referred to in the table.

Table 5: Summary of Environmental Impacts and Proposed Mitigation Measures

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure	Institutional Responsibilities	Cost Estimates
<u><i>Preconstruction</i></u>				
Location of Facilities	Severance (houses and land separated)	Identify locations where severance occurs; provision or compensate in keeping with the RP; assure the grievance procedure accommodates severance	PPMBs and Design Teams	Part of Design Cost
Location of Facilities	Impeded drainage; inadequate tertiary and secondary drainage	Accommodation of cross drainage along PST canals; provision of additional drainage	PPMBs and Design Teams	Part of Design Cost
Location of Facilities	Encroachment on protected forest areas and nature preserves	Identify legal boundaries and avoid encroachment in the detailed design; Annex 1 (see also Annex 7, Sec. 2.6)	PPMBs and Design Teams	Part of Design Cost
Location of Facilities/ Irrigation water use	Exposure of acid sulphate soils and related effects on surface water	Annex 9; identify and avoid cultivating crops in areas afflicted with acid sulphate soils; prepare design to avoid areas.	PPMBs and Design Teams	Part of Design Cost
<u><i>Construction</i></u>				
Clearing, grubbing and excavation	Injury of workers from mines and UXOs	Annex 6 and Annex 7, Sec. 2.1; notify supervising engineer for clearance	Contractor	Cost in bid for construction
Clearing, grubbing and excavation	Chronic health risk from dioxin contaminated soils	Annex 6 and Annex 7, Sec. 2.1; conformance with GOV regulations regarding disposal	Contractor	Cost in bid for construction
Occupation of land for labour camps and equipment yards	Degradation of agricultural land	Annex 7, Sec. 2.2; rehabilitation of land after use	Contractor	Cost in bid for construction
Excavation and closure of borrow pits	Land degradation, loss of soil resource	Annex 7, Sec. 2.3; proper use and closure of borrow pits	Contractor	Cost in bid for construction
Construction, dirt and materials hauling	Accidents and inconvenience along public thoroughfares	Annex 7, Sec. 2.4; signage, flagging, traffic controls, and rehabilitation of roads	Contractor	Cost in bid for construction
Excavation, dirt and materials hauling	Air quality deterioration	Annex 7, Sec. 2.5; wet suppression—watering; enforce speed limits and vehicle	Contractor	Cost in bid for construction

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure	Institutional Responsibilities	Cost Estimates
		emission standards		
Excavation, dirt and materials hauling	Excessive noise levels in populated areas	Annex 7, Sec. 2.5; enforce vehicle noise standards; limit hauling to daylight hours	Contractor	Cost in bid for construction
Conduct of work	Encroachment on protected forest areas and nature preserves	Annex 7, Sec. 2.6; prohibit firewood gathering, collection of construction materials, disturbance of vegetation, capture/ killing of animals, brush burning, and all forms of occupancy	Contractor	Cost in bid for construction
Conduct of work	Disturbance of (pre)historic artefacts and sites	Annex 7, Sec. 2.6; avoid disturbance of site; institute a chance find procedure; chance finds shall not be disturbed until an assessment is made and preservation actions identified	Contractor	Cost in bid for construction
Operation of labour camps, canteens and equipment yards	Uncontrolled dispersal of liquid and solid waste from construction sites	Annex 7, Sec. 2.7; provide toilets and shower rooms at labour camps; provide solid waste bins and acceptable means of disposal	Contractor	Cost in bid for construction
Excavation, operation of equipment yards and labour camps	Water pollution (sediment, oil and grease, faecal contamination)	Annex 7, Sec. 2.8 and 2.9; prepare a waste management plan; control runoff from bare earth during rainy periods with silt barriers; locate equipment repair yards away from watercourses	Contractor	Cost in bid for construction
Operation of labour camps, canteens and equipment yards	Impacts on health and safety of workers and general public	Annex 7, Sec. 2.10; safe drinking water supply at labour camps and construction sites, vaccinations, health checks and health education; onsite safety inspector	Contractor	Cost in bid for construction
Excavation and borrow	Exposure of acid sulphate soils and related effects on surface water	Identify and avoid use of acid sulphate soils as borrow; assure excavations through these soils are sealed and are not left exposed to weathering.	Contractor	Cost in bid for construction

Project Activity	Potential Environmental Impact	Proposed Mitigation Measure	Institutional Responsibilities	Cost Estimates
<i>Operations</i>				
Land use change	Encroachment on national parks and forest reserves; loss of biodiversity	Annex 1; implementation of the LGXM and TB Production Forest Conservation Plan	ICMB9	P1 (phase 1 cost); Table 7*
Intensified agriculture	Transport of pesticides to surface and groundwater (water quality deterioration, effects on aquatic habitat, potential health impacts)	Training and extension in integrated pest management (IPM) to reduce pesticide use (see Sec. A)	ICMB9	\$5,000 (P2) phase 2 cost
Intensified agriculture	Transport of fertilizer to surface and groundwater (water quality deterioration, effects on aquatic habitat, potential health impacts)	Training and extension in nutrient management to improve effectiveness of fertilizer use and impact mitigation techniques (see Sec. A)	ICMB9	(included in above cost)
Long term irrigation	Increased height of groundwater table and waterlogged soil	Monitoring groundwater table and soil salinity (Annex 8, Sec. 4.2)	ICMB9	Part of MT6 P1; (Table 7)
Industrial water use	Increased quantities of untreated urban and industrial effluents	Strict enforcement regime to assure high level of treatment for urban and industrial effluents (see Sec. B related to proposed loan covenant)	DONREs, ICMB9	Part of MT6; P1 (Table 7)
Water withdrawals and discharge	Changes in hydrological regime in downstream reaches of rivers	Annex 8, Sec. 2; monitoring changes in flow regime among the major rivers.	ICMB9	MT5; P1 (Table 7)
Water withdrawals and discharge	Changes in salinity in downstream reaches of rivers	Annex 10; monitoring changes in salinity among the major rivers.	ICMB9	MT8 and OP3; P1 (Table 7)

* Costs EMP contracts approved under phase 1 of the project are shown in Table 7.

B. DESCRIPTION OF MITIGATION MEASURES

47. This section describes the technical details of mitigation measures and clarifies the types of impact that give rise to them. To the extent possible, the conditions are described under which a particular measure is required, and designs, equipment and operating procedures are described as necessary. Performance indicators and acceptance criteria are identified where applicable. The list follows the sequence of impacts and mitigation measures found in Table 5. Construction phase mitigation measures that are the duty of the construction contractors to implement, numbers 5 – 16 below, are included in contract terms and conditions for the construction contract.

1. Severance (houses and land separated): Identify locations where severance occurs; provision or compensate in keeping with the RP; assure the grievance procedure accommodates severance

Potential severance events are inventoried through the resettlement component and accommodation made in the design to provide access across canals for disadvantaged groups. The numbers and types of accommodation provided will not be known until the detailed design is complete; however the design approach provides the means to minimize the number of events. The terms of reference for detailed design for the PST systems require that “participatory irrigation management (PIM) is incorporated into the development of the irrigation areas.” Farmers involved in PIM can make their severance problems known before the fact. According to the design TOR “other design aspects will be agreed including the locations of roads and bridges.” If some severance issues remain, the affected persons can use the grievance redress mechanism to resolve them (see Sec. 4.4). Severance will be alleviated by placement of parallel roadways and bridges at locations and intervals that reduce or eliminate the impact. Mitigation is satisfactory if no household is caused to travel more than one-half km further than originally necessary to access fields. Monitoring compliance is done through the grievance redress mechanism: if no unresolved problems remain then mitigation is considered satisfactory.

As an example of a detailed design solution, originally 30 bridges were proposed for crossing the Tan Bien main canal, which has a length of 23 km. Most of the proposed bridges were narrow, suitable for motorcycle traffic and designed for 2 T loading. Based on discussions with community representatives and the provincial government, the design was later changed to 21 bridges (an average of one per km), but wider, suitable for tractors, and capable of supporting a 10 T load. Some bridges along roadways support 30 T loads. In areas where there are few settlements such as the rubber plantations, bridges are located where there are existing roads and paths of travel and are less frequent than in community areas, where there is a higher density. Similar solutions can be expected in the irrigated areas where PST systems are currently under design.

2. Impeded drainage; inadequate tertiary and secondary drainage: Accommodation of cross drainage along PST canals; provision of additional drainage

The PST designs assure that drainage is not impeded by irrigation canals. This is done through provision of either aqueducts or siphons to effect crossing of irrigation canals by existing or proposed drainage courses. Existing drainage channels will become part of the final drainage solution and as such must be free flowing. As a result, impeded drainage is not a significant risk.

The PST design TOR specifies that the Consultant will “carry out topographic surveys at key point within the drainage system in order to check the adequacy of the existing primary and secondary drainage canals. Based on these surveys, the Consultant is to prepare designs for improvements to the existing drainage system that are considered necessary.” The Consultant is expected to “prepare the surveys and designs for new secondary and tertiary drains.” Drainage criteria are applied to the design of the PST systems. Some ponding is allowed but not to exceed a period of 48 hr, during which water would be evacuated through any constriction.

3. Encroachment on protected forest areas and nature preserves: Identify legal boundaries and avoid encroachment in the detailed design

The EMP proposes two approaches for mitigation (see Annex 1 Sec. 1.1). Design of irrigation canals will avoid direct impacts on natural forest ecosystems and land designated by a local, provincial, or national government agency as having protected forest status. Also, the Project will minimize indirect impacts by support of a buffer zone and park management programme for LGXM, and also for Phuoc Vinh Commune Forest Zones No. 67 and 68. Annex 1 describes the features of the park management programme. It is generally recognized that some areas of the buffer zone will be irrigated. As stated in Annex 1 of the EMP, “buffer zone irrigation was noted as not necessarily conflicting with the Park’s buffer zone development values. Provincial, District, Commune People’s Committees and the DARD unanimously supported irrigation in the buffer zone.”

Annex 7, Sec. 2.6 of the EMP calls upon the construction contractor to refrain from constructing any irrigation facilities in the vicinity of the national park or in forest reserves: “The contractor shall not extend the irrigation areas, borrow pits, work camps, access roads, main, secondary or tertiary canals into legally designated forestry, national park or nature reserve areas.”

4. Exposure of acid sulphate soils and related effects on surface water:
Annex 9; identify and avoid cultivating crops in areas afflicted with acid sulphate soils; prepare design to avoid areas.

Annex 9 of the EMP provides the principal mitigation measure for control of water quality deterioration from acid sulphate soils. It consists of a monitoring programme aimed at identifying where and when problems develop; however the central mitigation measure is avoidance of these soils within the Duc Hoa irrigation scheme. Figure 1 in Annex shows the location of these soils outside the proposed irrigated area.

5. Injury of workers from mines and UXOs: Annex 6 and Annex 7, Sec. 2.1; notify supervising engineer for clearance

Clearance of UXO and mines is the responsibility of the Ministry of Defence to be undertaken prior to construction. The contractor is required to report residual UXO and mines discovered during construction to the ICMB9 and supervising engineer (Annex 7 Sec. 2.1) and remove/dispose of these materials in accordance with rules set out in Annex 6.

6. Chronic health risk from dioxin contaminated soils Annex 6 and Annex 7, Sec. 2.1; conformance with GOV regulations regarding disposal

Dioxin contaminated soils may be found along the alignment of the Duc Hoa Main Canal (see Figure 1 Annex 6 of the EMP). The EMP (referenced annexes) specifies that “during excavation, site preparation or construction if any hazardous/toxic residues are discovered, the ICMB9 should act as the generator of hazardous wastes and should follow the instructions on the function of generator of hazardous waste, mentioned in the article 4 of the Circular Document No. 12/2006/TT-BTNMT dated 26 December, 2006 related on hazardous waste management.” It is the contractor’s responsibility to identify these materials and notify the ICMB9 of their presence.

Sampling for dioxin is costly so it is unlikely to be carried out routinely. According to US military information sources, the project area is low risk for dioxin.

7. Degradation of agricultural land: Annex 7, Sec. 2.2; rehabilitation of land after use

The Contractor is required to rehabilitate all agricultural land affected by temporary working areas of the project following their use. Inspection of the premises of labour camps and equipment yards for removal of materials and residues, followed by certification by the environmental inspector, is needed for closure of the sites.

8. Land degradation, loss of soil resource [due to borrow pits]: Annex 7, Sec. 2.3 – proper use and closure of borrow pits

The EMP (Annex 7, Sec. 2.3) specifies that the contractor will utilize materials only from approved borrow areas, stockpile topsoil separately, dispose of excess spoil in approved areas, re-introduce high quality soils through reshaping and use in cover of excavated areas, stabilize slopes of borrow pits that may be susceptible to collapse, and prepare/implement a rehabilitation plan for borrow pits before completion of the construction. Inspection of the borrow areas and spoil dumping locations, followed by certification by the environmental inspector, is needed for closure of the sites.

9. Accidents and inconvenience along public thoroughfares: Annex 7, Sec. 2.4; signage, flagging, traffic controls, and rehabilitation of roads

Rules set out in the construction contracts require contractors to provide traffic controls including flagmen and appropriate signage, enforce speed limits, provide security measures including barricades to limit access, and enforce national vehicle standards for equipment moving along roadways. Rehabilitation of roadways following use is required to bring the surface back to its original condition. The free flow of traffic is to be maintained on all public thoroughfares.

10. Air quality deterioration and noise: Annex 7, Sec. 2.5; wet suppression—watering; enforce speed limits and vehicle emission standards

The contractor is required to use wet suppression of dust in areas that affect public space, enforce speed limits and assure that transport vehicles meet national air emission and noise standards.

11. Encroachment on protected forest areas and nature preserves: Annex 7, Sec. 2.6; prohibit firewood gathering, collection of construction materials, disturbance of vegetation, capture/killing of animals, brush burning, and all forms of occupancy

Construction in the vicinity of forest reserves and the LGXM National Park could lead to illegal harvesting of firewood, animal poaching and other forms of disturbance. The Contractor is specifically enjoined to prevent workers from exploiting forest resources for personal or construction use. The restriction is monitored under the MT7 contract.

12. Disturbance of (pre)historic artefacts and sites: Annex 7, Sec. 2.6; avoid disturbance of site; institute a chance find procedure; chance finds shall not be disturbed until an assessment is made and preservation actions identified

In the event of discovery of historic or prehistoric cultural artefacts during construction, the Contractor is enjoined to cease work in the area of the find and contact the ICMB9, who in turn will notify the appropriate agency to dispatch technical staff to the site of the discovery, determine its archaeological value and prescribe an appropriate course of action: either to reroute the alignment of the canal around the discovery, or to map, excavate and archive the materials.

13. Uncontrolled dispersal of liquid and solid waste from construction sites: Annex 7, Sec. 2.7; provide toilets and shower rooms at labour camps; provide solid waste bins and acceptable means of disposal

The Contractor is required to provide these facilities for its workers. Monitoring is through inspection of the premises of worker camps and construction sites.

14. Water pollution (sediment, oil and grease, faecal contamination): Annex 7, Sec. 2.8 and 2.9; prepare a waste management plan; control runoff from bare earth during rainy periods with silt barriers; locate equipment repair yards away from watercourses

The Contractor is required to prepare a construction EMP that describes provisions for controlling contaminated runoff from active sites.

15. Impacts on health and safety of workers and general public: Annex 7, Sec. 2.10; safe drinking water supply at labour camps and construction sites, vaccinations, health checks and health education; onsite safety inspector

The Contractor is required to provide these facilities and services for its workers. Monitoring is through inspection of facilities and health and safety records.

16. Exposure of acid sulphate soils and related effects on surface water: Identify and avoid use of acid sulphate soils as borrow; assure excavations through these soils are sealed and are not left exposed to weathering

Acid sulphate soils are generally not within the irrigated area. Monitoring for Acid sulphate soils during construction is provided under EMP contract MT6.

17. Encroachment on national parks and forest reserves; loss of biodiversity: Annex 1; implementation of the LGXM and TB Production Forest Conservation Plan

The plan for protection of the national park and forest reserves is described in Sec. 2.

18. Transport of pesticides to surface and groundwater (water quality deterioration, effects on aquatic habitat, potential health impacts): Training and extension in integrated pest management (IPM) to minimize pesticide use.

Training programme is described in Sec. I.1.3.

19. Transport of fertilizer to surface and groundwater (water quality deterioration, effects on aquatic habitat, potential health impacts): Training and extension in nutrient management to improve effectiveness of fertilizer use.

Training programme is described in Sec. I.1.3.

20. Increased height of groundwater table and waterlogged soil: Monitoring groundwater table and soil salinity (Annex 8, Sec. 4.2)

Monitoring of groundwater table is provided under EMP Contract MT6, which provides groundwater table monitoring for national parks (Annex 1, Sec 2.6), production forests (Annex 1, Sec 3.5) and agricultural areas (Annex 8, Sec. 4).

21. Increased quantities of untreated urban and industrial effluents: Strict enforcement regime to assure high level of treatment for urban and industrial effluents.

See Sec. B related to assurances. The Project provides about 38 m³/sec (average flow) for DMI use, much of which will end up as wastewater discharge. Enforcement of discharge standards is the only means to mitigate the impact; industries are the most easily targeted for enforcement. Enforcement needs to be effective over the operations phase of the project. There is no means for guaranteeing that this will occur, though an assurance is proposed in Sec. B.

22. Changes in hydrological regime in downstream reaches of rivers: Annex 8, Sec. 2; monitoring changes in flow regime among the major rivers.

MT5 provides for flow monitoring of rivers. Responses to low-flow events are not described in the EIA; however a minimum flow of 14 m³/sec for the Be River and (Dong Nai – 300 m³/sec and Saigon 40 m³/sec) are mentioned in the EMP and reiterated in the Approval Decision of MONRE (see Appendix A). A proposed technical assistance will support comprehensive water resources management for the rivers within the area's watersheds.

23. Changes in salinity in downstream reaches of rivers: Annex 10; monitoring changes in salinity among the major rivers.

MT8 (for purchase/installation of equipment) and OP3 (for operations) provide for monitoring salinity in the lower reaches of Project Rivers. The EMP does not set salinity limits that would require release of additional flow; however the Decision by MONRE approving the EIA (see Sec. D and Appendix A) refers to "deeply salinity intrusion at downstream of Dong Nai river" that requires additional release of water from the Phuoc Hoa reservoir into the Be River.

III. MONITORING AND REPORTING

1. Summary of Proposed Monitoring

48. Table 6 provides a summary of monitoring of mitigation measures proposed under the project. Budgets for monitoring are generally subsumed under EMP contract budgets described elsewhere.

Table 6: Summary of Proposed Monitoring Requirements

Mitigation Measure	Parameters to be Monitored	Location	Measurements	Frequency	Responsibilities	Cost
<i><u>Preconstruction</u></i>						
Identify locations of severance; provision or compensate in keeping with the RP; assure the grievance procedure accommodates severance	Severance	Settled areas and communities along alignments	Travel time to severed land; complaints	During detailed design, then weekly during early stage of construction	ICMB9; PPCs	Part of PPMU budget
Accommodation of cross drainage along PST canals; provision of additional drainage	Drainage of incident rainfall and irrigation tailwater	Drainage systems within irrigated areas	Hydraulic calculations of drainage regimes	During detailed design	Design supervision consultant	Part of design supervision budget
Identify legal boundaries and avoid encroachment in the detailed design; Annex 1 (see also Annex 7, Sec. 2.6)	Encroachment on forest areas	Irrigated areas in proximity to forested areas	Spatial relationships of irrigated land and forests	During detailed design	Design supervision consultant	Part of design supervision budget
Annex 9; identify and avoid cultivating crops in areas afflicted with acid sulphate soils; prepare design to avoid areas.	Presence of acid sulphate soils	Irrigated areas in proximity to acid sulphate soils	Spatial relationships of irrigated land and acid sulphate soils	During detailed design	Design supervision consultant	Part of design supervision budget
<i><u>Construction</u></i>						
Annex 6 and Annex 7, Sec. 2.1; notify su-	Presence of mines and UXOs	Construction zones	Accident and injury reports	Weekly during construction	Contracting Environmental Su-	Part of construc-

Mitigation Measure	Parameters to be Monitored	Location	Measurements	Frequency	Responsibilities	Cost
pervising engineer for clearance					pervisor; MT7 contractor (CES/MT7)	tion contract and MT7 budgets (CC/MT7 budgets)
Annex 6 and Annex 7, Sec. 2.1; conformance with GOV regulations regarding disposal	Removal of dioxin contaminated soil	Construction zones	Conformance with regulations for disposal	Whenever contaminated soils are disposed	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.2; rehabilitation of land after use	Site rehabilitation	Labour camps and equipment yards	Visual examination	Following use	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.3; proper use and closure of borrow pits	Borrow pit rehabilitation	Borrow pits	Visual examination	During and after use	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.4; signage, flagging, traffic controls, and rehabilitation of roads	Traffic control and road repair	Along public roads in construction zone and along haul route	Visual examination	Daily or weekly; on project completion	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.5; wet suppression—watering; enforce speed limits and vehicle emission standards	Ambient air quality; traffic speed; vehicle emissions	All project site location and transmission line sites in the vicinity of the sensitive receivers and residential	QCVN 05:2009 – ambient air quality standards; annual TSP 140µg/m ³ , Max. 24 hours average 200µg/m ³	Daily or weekly as required	CES/MT7	CC/MT7 budgets

Mitigation Measure	Parameters to be Monitored	Location	Measurements	Frequency	Responsibilities	Cost
		areas				
Annex 7, Sec. 2.5; enforce vehicle noise standards; limit hauling to daylight hours	Noise emission level	All project site location and transmission line sites in the vicinity of the sensitive receivers and residential areas	TCVN 5949-1998	Daily or in response to reported non-compliance	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.6; prohibit firewood gathering, collection of construction materials, disturbance of vegetation, capture/killing of animals, brush burning, and all forms of occupancy	Illegal access to forest areas	Areas near forests	Observation of illegal access and possession of forest products	Weekly	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.6; avoid disturbance of site; institute a chance find procedure; chance finds shall not be disturbed until an assessment is made and preservation actions identified	Disturbance of historical, archaeological, or cultural artefacts	New excavation along project alignments	Observation of work progress and contractor response on discovery	Continuous	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.7; provide toilets and	Provision of facilities; wastewater	At worker camps, equip-	Observation of provisions; TCXD 188:1996 Urban	Monthly or in response to	CES/MT7	CC/MT7 budgets

Mitigation Measure	Parameters to be Monitored	Location	Measurements	Frequency	Responsibilities	Cost
shower rooms at labour camps; provide solid waste bins and acceptable means of disposal	ter discharges; solid waste	ment yards and construction sites	Wastewater - Standard for Discharge; QCVN 24:2009/BTNMT; QCVN 14:2008/BTNMT quality of domestic wastewater	reported non-compliance		
Annex 7, Sec. 2.8 and 2.9; prepare a waste management plan; control runoff from bare earth during rainy periods with silt barriers; locate equipment yards away from water	Receiving water	All receiving canals or water-courses	QCVN 08:2008 BTNMT or TCVN 5524-1995/QD-TDC (general requirement for protection of surface water against pollution)	Monthly or in response to reported non-compliance	CES/MT7	CC/MT7 budgets
Annex 7, Sec. 2.10; safe drinking water supply at labour camps and construction sites, vaccinations, health checks and health education; onsite inspector	Drinking Water Supply/Groundwater	Selected groundwater or potable water sources at construction sites	QCVN 09:2008/BTNMT or TCVN 5525-1995 Decision 09-2008 of Ministry of Health	Twice a year or in response to reported non-compliance	CES/MT7	CC/MT7 budgets
Identify and avoid use of acid sulphate soils as borrow; assure excavations through these soils are sealed and are not left exposed to weathering.	Presence of acid sulphate soils in construction zones	Along construction alignments	Presence and avoidance of acid sulphate soil conditions	Continuously in areas of potential acid sulphate soils	CES/MT7	CC/MT7 budgets

Mitigation Measure	Parameters to be Monitored	Location	Measurements	Frequency	Responsibilities	Cost
<u>Operations</u>						
Annex 1; implementation of the LGXM and TB Production Forest Conservation Plan	Efficient implementation of management plan	LGXM National Park/Production Forest Blocks 67 and 68	Assessment of effectiveness of proposed management plan	Twice annually	ICMB9	ICMB9 budget
Training and extension in integrated pest management (IPM) to minimize pesticide use	Implementation of training proposal	Training venue	Effectiveness of training follow-through	During and after training	ICMB9	ICMB9 budget
Training and extension in nutrient management to improve fertilizer use	Implementation of training proposal	Training venue	Effectiveness of training follow-through	During and after training	ICMB9	ICMB9 budget
Monitoring groundwater table/soil salinity	Consistency of monitoring output	ICMB9 office	Review of data collation reports	Twice yearly	ICMB9	ICMB9 budget
Strict enforcement regime to assure high level of treatment for urban and industrial effluents	Industrial effluent discharge data	Industrial sites	Industrial effluent parameters contained in QCVN24:2009/BTNMT	As required to assure compliance	Industrial Area Management Board (IAMB)	IAMB budgets
Annex 8, Sec. 2; monitoring changes in flow regime among the major rivers.	Consistency of monitoring output	ICMB9 office	Review of data collation reports	Twice yearly	ICMB9	ICMB9 budget
Annex 10; monitoring salinity changes in the major rivers.	Consistency of monitoring output	ICMB9 office	Review of data collation reports	Twice yearly	ICMB9	ICMB9 budget

2. Monitoring Procedures

49. Environmental monitoring on the Phuoc Hoa Project consists of three broad operational programmes: multi-basin environmental monitoring; project-wide environmental supervision and management; and site-specific environmental mitigation and monitoring.⁹ Monitoring is specified within the context of the EMP contracts, which can be generally separated among these programmes. MT5, MT6 and MT8 are aimed at multi-basin environmental resources, with focus on river flow, water quality and salinity levels. Project-wide focus on impacts is monitored under MT7. Site specific environmental mitigation and monitoring is undertaken under EMP contracts MT1 (park/forest preservation), MT2 (catchment conservation), MT3 (provision of drinking water supply), MT4 (environmental flow and fisheries management) and parts of MT6 (sulphate soils).

50. Procedures for monitoring vary widely with the application. Detailed information on procedures can be obtained from the EMP and from monitoring reports prepared under the EMP contracts and by the Project Design Supervision Consultant.

3. Reporting Procedures

51. Reporting of various types is conducted by the environmental contractors charged with implementing the EMP contracts (see Sec. 3.4). Construction contract monitoring reports are prepared quarterly under MT7; whereas water quality monitoring reports under MT6 are prepared semi-annually. Other contracts provide information on performance or data on an as-needed basis. All data available over a six-month time period are assembled into a semi-annual report prepared under Contract OP4, the coordination contract. This report and other sources of information are used by the Implementation Consultant to prepare a semi-annual report concerning environmental monitoring that is submitted to ADB. Semi-annual reporting of the results of environmental monitoring is stipulated in the Project documents and the means and frequency will be extended into Phase 2.

A. EMP CONTRACTS

1. Summary of Contracts

52. A number of “EMP Contracts” were prepared to fulfil the requirements for mitigation and monitoring set out in the annexes of the EMP. The relationship between EMP annexes and the implementation contracts is shown in Table 7. Though prepared under the first tranche of funding, these contracts are considered “bridging” activities and will extend through Phase 1 and into Phase 2 of the project. Additional financing is needed in some instances to extend the contracts to the end of Phase 2.

⁹ BVI 2009; Phuoc Hoa Water Resources Project Environmental Programme: Six monthly Monitoring Report January—June 2009.

Table 7: EMP Contracts for Mitigation and Monitoring

	Code	Coverage	Short Name	Status/ start date	Duration	Applicability to Ph 2	EMP estimated cost (USD) ¹	Revised esti- mate ² (USD)	Contract cost ³ (USD)
1.	MT1	Annex 1 (except parts of 2.6 and 3.5)	TBNP Conservation	Pending	45	Y	213,850	256,620	
2.	MT2	Annexes 2 and 3	Catchment/Reservoir Protection	Apr 2010	42	N	220,000	286,000	286,565
3.	MT3	Annex 4	Water Supply (EQP)	Pending	36	N	200,000	260,000	
4.	MT4	Annex 5	Fishery Management	Jan 2010	50	N	42,000	71,400	67,014
5.	MT5	Annex 8 Sec. 2	River flow monitoring	Sept 2009	50	N	170,700	238,980	226,409
6.	MT6	Annex 1, parts of Sec. 2.6 and 3.5; Annexes 8 (except Sec. 2), 9 and 11	Water quality monitoring	Sept 2009	50	Y	174,810	227,253	226,158
7.	MT7	Annex 7	Construction monitoring	Oct 2008	48	Y	103,192	103,192	99,506
8.	MT8	Annex 10	Salinity monitoring (equip. purchase)	Started	6	N	80,000	92,000	
9.	MT9	Annex 12	Post EIA Evaluation Programme	Not started	6	Y	20,000	24,000	
10.	MT10	Capacity building	Capacity building	Nov 2009	20 ⁴	Y	18,000	27,000	26,774
11.	OP1	Annex 6	Contingency plan for HW	Not started	50	Y	15,000	15,000	
12.	OP2	Annex 4	Water Supply (OPS)	Not started	50	N	15,000	18,000	
13.	OP3	Annex 10	Salinity monitoring (OPS)	Not started	50	N	20,000	24,000	
14.	OP4	Overall coordination	Overall coordination	Aug 2009	50	Y	30,000	33,900	33,581

¹ Decision 914 QD-BNN-ND Ministry of Agriculture and Rural Development: "Decision to approve the additional package of environmental management into the overall procurement plan of irrigation projects Phuoc Hoa Binh Duong, Binh Phuoc"

² Proposed EMP packages & bidding plan of Phuoc Hoa water resources project Loan: No 2025 VIE (SF) (revised Consultant Start date and Cost Estimate). Attached to File 612 ICMB9

³ Contracts are priced in local currency (VND). USD prices are based on the exchange rate prevailing at the time the contract was signed.

⁴ Commitment to ADB by letter dated 29 Dec 2008 (to Ellington) was 36 mo. Contract signed for 20 mo.

1.1.2 Description and Status of Contracts Relevant to Phase 2

53. The following sections provide a description of the EMP contracts related to Phase 2 activities consisting of a description of the work, a review of its current status, and proposals for any revision or addition to the work to improve environmental performance of the Project.

2. MT1: Tan Bien National Park and Forest Protection Programme Tây Ninh Province

54. MT1 (Annex 1) aims to set up a management framework for the LGXM (Tan Bien) National Park and provide protection for production forests in Tây Ninh Province. The work consists of *LGXM National Park Protection and Buffer Zone Management Plan*, a “community-focussed buffer zone conservation and development plan combined with within-park biodiversity and habitat monitoring and conservation management activities,” and the *Tan Bien Production Forests Protection Plan*, which would provide “within-reserve forest and habitat monitoring and forest protection and institutional capacity building activities.”

55. A multi-activity approach is envisaged, identified in Table 2 of Annex 1 of the EMP, under four components consisting of capacity building of forest management personnel, commune development plans for adjacent settled areas, multi-stakeholder analysis aimed at preservation of valuable resources found in the park and forests, and biological, biophysical and social surveys. Given the existence of ongoing conservation planning initiatives by the Government and Birdlife International (see Sec. 1.1.1), the proposal outlined under the Phuoc Hoa Project emphasizes park and forest reserve planning and management *in its relation to irrigation development*.

56. Multi-stakeholder workshops are envisaged and boundary demarcation, including on-ground surveys. Action plans would be developed to address near term threats. Annex 1 aims to avoid duplication of activities undertaken through ongoing programs, which generally cover such activities as ranger patrols, biological research, habitat protection within the park and park management issues of an institutional nature. The proposal emphasizes baseline biological surveys that can be used to determine mid-term changes due to the Project, monitoring of habitats and hydrological features that may be affected by the Project, training aimed at capacity building and a buffer zone development plan. The proposal also aims to reduce human-induced impacts through an alternative employment programme for households engaged in destructive activities near or in the park, the buffer zone programme that includes alternative livelihoods, mainly surrounding forest production, and community based forest management training/engagement, and, potentially, support for resettlement of people who now reside within the Park's boundaries. In agreement with ADB and the Government, specific aspects of buffer zone management are excluded because of ongoing activities under government initiative or the On-farm and Social Development Program (OSDP), leaving focus on social forestry development, non-timber forest products, fruit tree based agro-forestry and contracts with households for community-based forest management.

57. A threat monitoring system is also a key component in the LGXM plan, which would include satellite imagery analysis for changes in vegetation cover; ground-truthing of image interpretation; field survey of wildlife and evidence of disturbance; hydrological monitoring; cross-sectional monitoring of aquatic biology and database development and management.

58. The *Tan Bien Production Forests Protection Plan* remains relatively undefined due to lack of information regarding Forest Blocks Nos. 67 and 68, leading to a project concept mitigating pressures from increased population. The program includes awareness workshops, reserve boundary demarcation, coordination activities, an extended education and awareness programme buffer zone alternative livelihoods development, some reforestation efforts and production forest monitoring.

59. Current status: A review on 28 June 2010 of the status of this activity with DARD Forest Management Unit officials at Tay Ninh and with the Director of the LGXM National Park Board revealed the following:

- The contract for the LGXM National Park and Forest Protection Programmes is scheduled to begin coincident with Phase 2 of the Project (June 2011).
- Some reforestation is underway in the areas of Production Forest Blocks 67 and 68 under the “Five Million Hectares Plantation Forest Programme” and involves planting of acacia and rubber using Government and matching community funds.
- Parallel activities described in the EMP (Birdlife International and FIPI sponsored buffer zone management programmes (see Sec. 1.3.2 of Annex 1)) have been conducted, but not at the scale originally envisioned in the EMP.
- Boundaries of the LGXM National Park are defined and demarcated on the ground. Buffer zone coverage is defined (covering the areas of three communes), and there has been some community involvement in designating functional uses of land within the Park buffer zone.
- LGXM Park Management Board receives a budget that supports operations for about 80 staff (including 55 field staff), ranger patrols and some outreach activities, mainly awareness raising in primary schools and supervision of ecological research by university students. It received a grant for \$50,000 for 2009-2010 that was used for capacity building of national park staff, some equipment purchases and awareness raising in the buffer zone around the park. A second grant is being applied for (\$150,000) aimed at establishing a benefit sharing mechanism for people living in¹⁰ or around the park.

60. Revisions and Additions: There is no basis for revising the programmes as they currently are proposed and the ICMB9 is planning to award the contract in Phase 2 of the Project. The detailed design of the PST system for Tan Bien Irrigation System, underway currently, should maintain an appropriate distance from the boundaries of the Park. Construction activities should be closely watched to prevent workers from incursion into the park or forest and collection of wildlife or other forest products, as already specified in the list of mitigation measures for the EMP.

3. MT5 – Monitoring Water Flow of Be, Saigon, Dong Nai and Vam Co Dong Rivers

61. MT5 (Annex 8, Sec. 2) regarding river flow monitoring is primarily aimed at understanding the consequences of flow diversion from the Be River and releases needed for control of salinity in the downstream channels. Hence the programme relates mainly to Phase 1 of the Project, with little consequence as a mitigation measure for impacts stemming from Phase 2 infrastructure. Flow monitoring at one

¹⁰ There are 21 households that have lived within the park boundary greater than 8 years, and another 70 that have lived within the park less than 8 years.

station along the Vam Co Dong River (considered “downstream” of the irrigation command areas) is proposed, but the yield of data relates to the synoptic hydrological condition rather than to irrigation drainage, the effects of which could not likely be distinguished from other forms of inflow. It is, therefore, not considered that this programme has a direct bearing on Phase 2 of the Project.

4. MT6 – Environmental Monitoring Programme

62. MT6 is the Environmental Monitoring Programme that encompasses parts of Annex 1, Secs. 2.6 and 3.5 and Annexes 8 (except Sec. 2), 9 and 11. The work focuses primarily on water quality monitoring. Under the general framework of environmental monitoring it is the largest contract falling within the multi-basin environmental monitoring programme. The project consultant is a JV of the Southern Institute of Water Resources Planning (SIWRR) and the Research Institute for Aquaculture No. 2 located in Ho Chi Minh City. SIWRR is the lead group and is an agency under MARD

63. While water quality monitoring is conducted also under Contract MT7 aimed at localized impacts, the thrust for MT6 is the basin scale. It addresses and means to detect degraded water quality due to organic matter in the newly constructed reservoir, and potential impacts on fish and fisheries in the Be River downstream of the barrage and its effect on water quality during the dry season when flows are at their lowest. Effects due to potential acid sulphate soil contamination also are addressed. Reduced flows result in the potential for salinity intrusion in estuaries of rivers, and sediment loads from upstream affect the life and viability of reservoirs. Groundwater quality and aquatic biodiversity also are monitored under the contract.

64. The consultant’s initial report¹¹ describes specific tasks within the scope of work, summarized below:

1. Building upon and adding to the existing surface- and groundwater quality, biodiversity and fishery monitoring network
2. Monitoring, collection of samples and presentation of data during the construction phase
3. Focus on the Duc Hoa scheme in relation to acid sulphate soils, groundwater and drainage waters before and during construction for characterization of baseline and effects
4. Modifying and increasing monitoring in the Phuoc Hoa Reservoir, and commissioning new monitoring sites
5. Acquiring data from existing monitoring programmes for the Be, Saigon, Dong Nai, and Vam Co Dong Rivers, acid sulphate soil, groundwater and drainage water data in Duc Hoa, and other sites for presentation alongside new data
6. Establish new monitoring points as appropriate to monitor basin-wide impact during the operation phase
7. Obtaining, consolidating and presenting data for existing and new observation points during the operation phase

¹¹ Initial Report Phuoc Hoa Water Resources Project, Package MT6: Consultancy Services for Environmental Monitoring; Southern Institute of Water Resources Planning; January 2010.

8. Preparation of twice yearly monitoring reports regarding all collected data, inclusive of analysis, impact identification, mitigation recommendations, and graphical presentations of annual and seasonal trends
65. Other tasks related to set up of permanent monitoring points and acquisitions of equipment are also to be undertaken by the Consultant.
66. For the construction phase, 23 water quality monitoring stations are identified in the Be, Saigon and Dong Nai Rivers for analysis of physical-chemical, nutrient and organic parameters; groundwater elevation in 15 stations and quality monitoring in 11 stations; monitoring acid sulphate soils and acidic water in soil, drainage and groundwater; collection of aquatic species at 11 locations; and monitoring of urban and industrial outfalls.
67. Current Status: The contract was executed in Sept 2009 and is expected to run for 50 mo until Nov 2013. The initial report was issued in Jan 2010 and the first of the six-month monitoring reports is due in July 2010. According to the project designers, various existing water quality data will be incorporated into the databases to contribute to the analysis of issues. The contract will expire in Oct 2013, about nine months short of the end of the supplemental loan; however there is no apparent need to extend the contract.
68. Revisions and Additions: None is proposed.

5. MT7 – Environmental Monitoring of Construction Contracts

69. MT7, related to Annex 7 of the EMP, “Consultancy Services for Environmental Monitoring of Construction Contracts” was initiated in October 2008 and extends for 48 mo (Oct 2012). The work is characterized as a project-wide environmental supervision and management programme. The contract is undertaken by a joint venture (JV) of the Institute of Water Resources and Environment and the Institute of Environment and Natural Resources, located in Ho Chi Minh City. It is aimed at monitoring mitigation measures implemented by the construction contractors described under the construction phase in Table 5. Table 6 lists the monitoring parameters, the actions involved, typical monitoring frequency and locations for monitoring specified under the contract. Reports summarizing the results of monitoring are submitted quarterly to the ICMB9, which in turn compiles a semi-annual monitoring report for submittal to ADB. With the exception of the Duc Hoa Main Canal, the current contract covers only components of the Phuoc Hoa Project implemented under Phase 1. An extension of the contract and additional budget is necessary to cover construction of the PST systems for Tan Bien and Duc Hoa.

70. The MT7 Contractor provides support to the construction contractors for formulating and implementing Site EMPs. The MT7 Contractor has prepared a reporting format for environmental Site monitoring that provides a basis for standardizing the results. Most data are gathered by the contractor and submitted via the reporting forms, with limited verification monitoring undertaken by the MT7 Contractor, primarily in the form of analytical monitoring (air, water and noise). Monitoring programmes and schedules are provided to contractors, and remedial action and limit levels for various parameters are set and acknowledged by the Contractors. In addition to independent sampling, the MT7 Contractor assesses compliance with limit values and the effectiveness of mitigation measures, recommends amendments to monitoring procedures and remedial actions, evaluates responsiveness of Contractors to environmental requirements, and assesses whether the standard of environmental management is sufficient to maintain good relations with the surrounding communities. The MT7 Contractor visits construction sites monthly, or in some cases quarterly.

Finally, the MT7 Contractor prepares regular quarterly reports that summarize monitoring results, which are based on the quarterly reports of the Contractors and verification monitoring. The MT7 Contractor also has a responsibility to advise ICMB9 and the PPMBs on implementation of the EMP during the operations phase.

71. The contractor reporting format provides for recordation of complaints brought by the community in respect to environmental conditions. There is general awareness of the right to register complaints; however summary reporting has not brought forward the registry of complaints and actions taken, so while there is a grievance mechanism in place, there is an uncertain degree of redress.

72. Reporting combines the results from all ongoing construction packages. To date there have been four quarterly reports issued by the MT7 Contractor, the most recent dated April 2010. The current status of the construction packages is shown in Table 8. Monitoring results are provided in respect to each separate package and a set of recommendations are made to address improvements in performance with respect to mitigation.

73. Current Status: Reporting to-date indicates relatively good compliance with the terms of the EMP; however there is reason to be uncertain about the levels of compliance being practiced, because the construction contractor is expected to monitor his own compliance with environmental terms and conditions specified in the construction EMP. Some mitigation measures are difficult and are therefore likely to be avoided; others may be monitored selectively and results may not be representative; and some mitigation measures may be ignored as an unnecessary cost. The environmental monitoring contractor is not present in the field sufficiently to monitor implementation.

Table 8: Status of Construction Packages as of April 2010

<u>No.</u>	<u>Component</u>	<u>Status</u>
1A	Headworks	Ongoing
1B	Transfer Canal and structures from km 0+000 to km 12+192	Ongoing
1C	Transfer Canal and structures from km 12+192 to km 26+550	Ongoing
1D	Transfer Canal and structures from km 26+550 to km 40+483	Ongoing
1E	Admin building, 22 KV transmission line and transformer	Complete
1F	Headworks access road	Complete
3	Tan Bien Main Canal	Ongoing
4	Duc Hoa Main Canal	Not started
5	Tan Bien Irrigation Area	Not started
6	Duc Hoa Irrigation Area	Not started

74. Revisions and Additions: The continuance of MT7 implementation into Phase 2 should include the following:

1. Renew, extend or re-bid the contract to encompass construction of PST systems for the Tan Bien and Duc Hoa irrigation areas.
2. Increase the presence of the EMP MT7 contractor in the field to provide one or two full time field personnel depending on the number and size of active contracts, transport and per diem, and basic monitoring equipment, and elevate the degree of verification monitoring to include regular and repeat visits to active construction zones and compliance inspection of basic provisions contained in the EMP.

3. Report on verification monitoring in separate sections of the report from contractor produced data results; demonstrate how verification monitoring is effective at assuring that contractors are correctly presenting actual conditions.

6. MT8 and OP3 (Annex 10) Salinity Monitoring Programme

75. This programme is concerned with monitoring salinity levels in the lower Dong Nai and Saigon Rivers in order to provide controlled releases of water from the Phuoc Hoa and Dau Tieng Reservoirs to maintain acceptable salinity levels. While a salinity monitoring station is proposed also on the Vam Co Dong River downstream of the irrigation command areas, the programme stems from a) potential impacts from damming of the Be River and b) opportunities for enhancement of water quality (e.g. reduction of salinity) in the Saigon River. Neither of these objectives is related to the development of the command areas under Phase 2, and hence the programme is not considered part of the scope of the supplemental loan.

7. MT10 Building Capacity, Technology Transfer and Increasing Awareness

76. MT10 is aimed at provincial, district and commune officials¹² and communities. The Project is executed by the Southern Institute of Water Resources Research located in HCMC. It runs for two years (until early 2012) and provides funding for 12 participatory workshops in five provinces covering the project area and HCMC. Workshops are conducted at provincial and community levels and in locations where key protective measures are needed (LGXM National Park and the area of acid sulphate soils in Long An Province). Using PowerPoint presentations the workshops present background information on the project, explain its technical aspects and describe potential environmental impacts including the findings of the project EIA. The afternoon session is used for discussion at-large and in focal groups. Attendees are urged to provide comments, ideas and suggestions; people are aware they are able to voice complaints and grievances about aspects of the work. The Progress Reports incorporate a record of the content of discussion, comments and questions raised, and responses by the management unit.

77. Content of workshops is geared to the important issues within the area. For instance special topics presented at the workshops at Binh Phuoc, where the Phuoc Hoa barrage and reservoir are located, focused on reforestation and forest conservation issues, reservoir and downstream fisheries, and aquaculture. Workshops in irrigated agriculture areas will focus on IPM, nutrient management, protection of water quality, domestic and agricultural pollution sources and other downstream issues. Outside lecturers are called on to present special topics.

78. Current Status: The contract was signed in Nov 2009 and an inception report issued in March 2010. Two workshops have been held in Binh Phuoc Province, each attended by around 60 persons. A progress report was prepared that provides the basis for this information. The provincial government workshop was attended by provincial DARD and DONRE officials, the provincial Forest Protection Department, and provincial Forestry and Fisheries Divisions. ICMB9 and PPMB representatives were also present. Community representatives at the second workshop included the CPC, Fatherland Front, the District Environment Office, the District Agriculture Department, Women, Youth and Farmers Associations, and individual farmers. The workshop described environmental and irrigation problems arising during the Phuoc Hoa reservoir construction; the integrated management approach for water resources

¹² Departments of Science and Technology, Natural Resources and Environment, and Agriculture and Rural Development, and Women's and Youth's Unions attend with about 50% of those present being farmers. About 50—60 persons attend a workshop.

in the Be River Basin; forest management and reforestation in the upstream watershed of the Be River; and exploitation of the fishery resource in the Be River basin and Phuoc Hoa Reservoir. Various issues were raised during discussion sessions of the workshops, including deposition problems, and means for limiting sediment deposition, in the reservoir during construction and operations; dust caused by the construction that affect local communities, and means for controlling dust; water shortages and salinity increases, and the project response for dealing with these problems; issues related to socio-economic development (appropriate tree species and livestock) in the project area during operation of the reservoir, and the project response; environmental pollution in the area around the lake and discussion on restrictions on fish cage culture and fish breeding; and operations of the fish pass and its management. The documentation on these workshops complies substantially with the requirements for public consultation on environmental issues during the construction phase of the project.

79. Revisions and Additions: The continuance of MT10 implementation into Phase 2 should include the following:

1. Extend the contract for an additional ten months to facilitate various aspects of the project as described below.
2. Extend the scope of the contract to directly address the requirements of public consultation set out in the SPS.
3. Increase the scope of the contract to include facilitation of the environmental grievance redress mechanism (see Sec. A).
4. Extend the scope to provide training in IPM and nutrient management alongside other topics to members of the downstream communities within target irrigation areas.
5. Provide a budget for dissemination of printed literature on key environmental topics in the respective areas of the project.
6. Assure that reporting under MT10 and its follow-on reporting (OP4 and Implementation Consultant reporting) explicitly address discussions, comments, questions, complaints and follow-up actions arising from workshops organized under the contract.

8. OP4 Regulation, Supervision and Synthesis for Packages of Environmental Management

80. The OP4 contract coordinates the inputs of the various EMP consultants as required by the ADB¹³. The Project is executed by the Institute of Coastal and Off-shore Engineering located in HCMC. It runs for five years (until early 2014). The consultant's inception report¹⁴ describes specific tasks within the scope of work, summarized below:

1. Management, coordination, supervision and monitoring of the EMP contracts and programmes
2. Collection, storage and distribution of EMP monitoring data

¹³ See Item 4 under Section V: Assurances, in the RRP: "The CPO/PMU will subcontract a qualified institute acceptable to ADB, to carry out the EMP on its behalf."

¹⁴ Initial Report Phuoc Hoa Water Resources Project, Package OP4: Regulation, Supervision and Synthesis for Packages of Environmental Management; December 2009.

3. Site-visits to ongoing construction work and field monitoring, and participation in public meetings
 4. Preparation of six-month monitoring reports for distribution among agencies and provincial people's committees
81. OP4 acts as the owner's (e.g. ICMB9) representative in respect to the various EMP programmes (MT1-10) to "represent and support" ICMB9 in management and coordination of these contracts. An extension is likely needed to continue the contract to the end of Phase 2.
82. Current Status: The contract was issued in Aug 2009 and lasts for 50 mo. An inception report was issued in Dec 2009. The first six-month consolidation report is due at the end of June 2010 and is not yet available.
83. Revisions and Additions: None is proposed.

IV. PUBLIC CONSULTATION AND GRIEVANCE PROCEDURE

1. Public Consultation during Project Preparation

84. The EIA describes public consultation held in communes with local government agencies, affected households and ethnic communities. Most issues dealt with compensation for land, priority for poor households and assistance for recovery of livelihoods. Documentation on public consultation during EIA preparation is sparse.

2. Public Consultation during Implementation of Phase I

85. Contract MT10 provides a framework for public consultation during implementation. At least two public meetings are being held in each affected province aimed at informing a broad cross-section of government staff and local people (primarily farmers) of the project objectives, technical aspects and potential impacts. Specific topics are addressed that are most relevant for the area where the meeting is held, and adjusted for each meeting. Meetings last a day and the afternoon session involves discussion and comment. Participants get the opportunity to voice their concerns, raise questions and speak out for and against various aspects of the project. Records are made of the contents of the presentation, nature of discussions and comments/questions raised, as well as responses by the project proponent. These records are summarized and presented in the MT10 reporting, and are available for summarization in the six month reporting provided by the Implementation Consultant.

3. Public Consultation during Phase 2

86. Though not originally intended for the purpose, the workshops held under MT10, which continue under the current contract until June 2011, meet the requirements outlined in the SPS Appendix 1 Item 4 related to consultation and participation:

"The borrower/client will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. Meaningful consultation is a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making."

ing, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.”

87. Some areas of weakness are in gaining participation of a good cross-section of the community, including disadvantaged groups and women, enabling the incorporation of all relevant views and sharing of development benefits and opportunities. Reporting on the content of public consultation also is insufficiently explicit. Recommendations regarding public consultation during the implementation period are provided in Sec. 7.

A. GRIEVANCE REDRESS MECHANISM

1. Purpose of the Mechanism

88. The grievance redress mechanism is meant for persons seeking satisfactory resolution to their complaints on the environmental performance of the Subproject. The mechanism will ensure that: i) the basic rights and interests of every person affected by poor environmental performance of the Subproject are protected; and ii) their concerns arising from the poor environmental performance of the Subproject during the conduct of pre-construction, construction and operation activities are effectively and timely addressed.

2. Access to the Mechanism

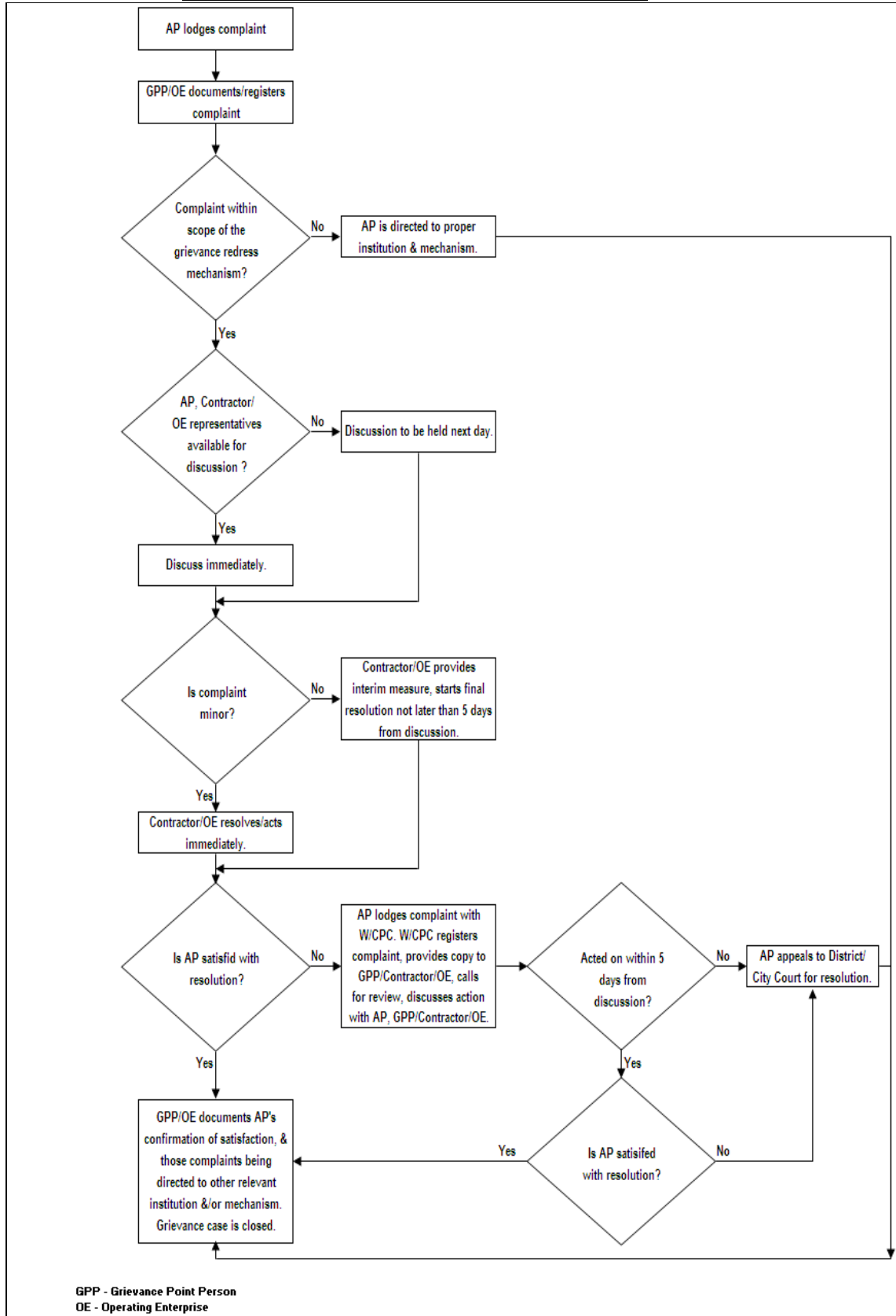
89. Any person who has a complaint regarding the environmental performance of the Subproject during pre-construction, construction and operation phases will have access to the grievance redress mechanism described in the subsequent section. The Subproject through the Grievance Point Person (GPP) will ensure that:

- (i) the grievance redress mechanism is publicly disclosed, and posted in the offices of the affected communes and in strategic places of the Subproject's area of influence;
- (ii) the grievance redress mechanism is accessible to all segments of affected villages/communes; and
- (iii) the public, most especially the residents and passers-by in the vicinities of influence of the Subproject, is aware of their rights to access, and will have access to, the mechanism free of administrative and legal charges.

3. The Grievance Redress Mechanism

90. Managing grievances takes a step-by-step process (see Fig. 1). It requires assigning responsibilities and specifying timelines for prompt responses/actions to grievances to avoid prolonging the misery of affected person/s (AP/s). Grievances raised on environmental impacts are critical to the health and wellness of affected persons. Hence, timelines for responses/ actions are critical. The recommended grievance redress mechanism features step/s to be observed prior to construction, during construction and during operation. Informally, a complainant can approach or call the ICMB9, the Contractor or the Operator to raise his/her complaints/concerns. The formal mechanism is discussed in the succeeding paragraphs.

Fig 1: Grievance redress Mechanism Flow Chart



4. Prior to Construction

91. Prior to the disclosure of the Subproject grievance redress mechanism to the affected communities, the ICMB9 will appoint a Grievance Point Person (GPP) to handle grievances lodged prior to construction and to disclose the grievance procedure to local communities. The GPP will be under the supervision of the Environmental Unit of the ICMB9. Sufficient recording and reporting systems will have been set up to sustain the productive implementation of the grievance redress mechanism.

92. At the latest, one month prior to the start of construction, the grievance mechanism will be disclosed to affected villages and communes by the GPP in coordination with the concerned CPCs. It may be disclosed during social preparation, or through the MT10 workshops, or by means of an independent IEE disclosure. The information to be disclosed/explained will, at the least, include: i) the objective/purpose of the grievance redress mechanism; ii) who can raise grievances; iii) what grievances are within or outside the scope of the mechanism; iv) no cost involved on the part of complainants; v) the benefits from/advantages of using the grievance redress mechanism; vi) the step-by-step procedure; vii) the entities involved in the mechanism, their respective designated liaison and grievance persons, their contact numbers and addresses; viii) responses that complainants can expect from the entities when they lodge a complaint, which will vary depending on the time (daytime or night time), day (weekday or weekend), weather (fine or stormy), and magnitude of impact complained about (minor or major), among others.

93. The GPP will make sure the mechanism (including the names and contact details of point persons of involved entities) is posted at the offices of affected CPCs.

5. During Construction

94. Grievance Point Person (GPP): The Construction Contractor will appoint a person to serve as GPP who will undertake the function in lieu of the ICMB9 during construction. The GPP should be introduced to the villages and communes at the time of construction mobilization and should be available fulltime at the job site once work is in progress. Appointment and delineation of functions of the GPP will be made part of the construction EMP prepared by the Contractor.

95. Lodging a Complaint: Affected persons (APs) may lodge complaints to any of the following: i) the contractor, through its Grievance Point Person; ii) third parties, e.g., village association or NGO; iii) Subproject-affected CPCs; and iv) the ICMB9. An example a Grievance Input Form is provided in Appendix B.

96. Grievance Documentation/Registration: The GPP provided by the Contractor will be responsible for documenting and registering complaints received during construction. Other potential complaint recipients will make sure that the received complaints are documented by, and registered with, the GPP as soon as possible. The GPP will make sure that documented/registered complaints are acknowledged, duly referenced and complainants informed of the expected action timelines as set forth in the established mechanism. The GPP will inform the AP immediately if the grievance is within, or outside, the purview of the mechanism. If it is outside the scope, AP will be directed to the proper institution and/or proper mechanism for the complaint.

97. Review, Investigation, Resolution: If it is covered by the mechanism, the complaint will be immediately reviewed, investigated and discussed together with Contractor's Grievance Point Person, if conditions allow. If not, the review, investigation and discussion should take place the following day. The discussion will cover measures to implement based on review and investigation. If impact/issue is minor,

the Contractor will immediately act on the complaint. These are generally those that would not require thorough review and investigation and are easy to resolve. If the issue needs more thorough review and investigation, more work to be done, and/or supplies/parts to be procured, the Contractor will immediately provide the most suitable interim measure to reduce impact; and to start working on the final measure not later than 5 working days from the day the discussion meeting is held.

98. *Progress Tracking:* The GPP will keep track of and document the progress of each step for record purposes, future reference and for monitoring and evaluation of the effectiveness of the mechanism. If, according to the AP, the impact has been resolved satisfactorily, the GPP will obtain a written confirmation of satisfaction from the complainant, which will form part of the grievance documentation.

99. *Monitoring and Evaluation:* For at least a week after closure of grievance (that is, when action implemented has been satisfactorily confirmed in writing by the complainant), the GPP will monitor the effectiveness of the resolution. Monitoring will be properly documented. The GPP will make sure that the status of grievance management is reported quarterly to the ICMB9 through the construction environmental monitoring contractor (MT7). The report will provide comprehensive information on number of grievance received, timeframe of actions made, number of action backlogs, efficiency rate, and remarks particularly on the constraints and lessons learned. Reports will serve as basis for evaluating the effectiveness of environmental mitigation and monitoring, and will help in determining improvements in environmental management of the Subproject. It is also advisable to use the monitoring reports to report back to the concerned villages and communes on the implementation of the grievance redress mechanism.

6. During Operation

100. Affected persons (APs) may lodge complaints with Subproject-affected CPCs, or the Subproject Operating Enterprise during operation. The Operating Enterprise (OE) will be responsible for documenting and registering complaints received during operation and will follow the same procedures prescribed for the construction phase with respect to documenting the grievance; informing the complainant; review, investigation and resolution; and monitoring and evaluation.

7. Appeal for Dissatisfied Complainants/APs

101. In the event the issue persists, the AP can lodge an appeal to his/her CPC. The CPC will immediately: i) record the appeal; ii) contact the ICMB9, Contractor GPP or OE, provide them with copy of the appeal; and iii) call for a meeting to review the history of the grievance and discuss the appeal and quick resolution of the issue. If the proposed action/measure has not started within 5 days from the time of formal lodging of the appeal, AP can seek assistance from CPC to raise the grievance to the District Court. It is highly unlikely that grievance redress process for the Subproject will reach the level wherein Complainants need to go through the “appeal” stage.

8. Disclosure

102. The elements of procedure described herein have been disclosed in entirety to the Construction Management Division of ICMB9 (through the Head of the Division). Each step was explained and discussed in detail. Accordingly it is on record that the procedure is commonly used at construction sites within ICMB9 in specific and among MARD agencies in general. The mechanism will be sent to all construction contractors and related districts/communes in the project areas in order to inform these groups about the procedure.

V. IMPLEMENTATION ARRANGEMENTS

103. The implementation arrangements for the EMP are set up under the prior loan and will be continued into Phase 2. There is an Environmental Unit at the ICMB9 that administers the programme. It is supported by an Environmental Specialist within the office of the Supervision Consultant for the ongoing project (Loan 2025-VIE). Work in environmental management is conducted under contract by regional Vietnamese institutions under the supervision of these two groups. Contracts are listed in Table 7. Institutions holding ongoing contracts are shown in Table 9.

104. ICMB9 has established Provincial Project Management Boards (PPMBs), which are listed in the EMP as implementing agencies in respect to the contracts. However their role is negligible in practice and none of the PPMBs have environmental staff, though some PPMB staff may take on tasks related to environmental protection if there is a need to do so. The arrangement is consistent with the loan covenants that states “the PMU shall be responsible for implementing the EMP and shall sub-contract this task to an appropriate local institute agreed with the Bank.”

105. The construction contractors are engaged in implementing the EMP as well. Contractors are required to prepare a construction EMP that substantially meets the requirements of the EMP. These requirements are found in Annex 7 of the EMP. Contractors are expected to have a person on staff responsible for environmental matters. This person or his assignee is responsible for completing the pro forma monitoring reports that are assembled and summarized under EMP Contract MT7.

Table 9: Institutions conducting EMP Contracts

<i>Ref. No.</i>	<i>Name</i>	<i>Contractor</i>
Package MT2	Be River Catchment Protection Study and Phuoc Hoa Reforestation and Forest Management	(JV) Thang Long Infrastructure Development JSC/Saigon Thang Long JSC/Ramboll Nature AB
Package OP4	Consultancy Services for Coordination, Supervision and Monitoring of EMP Activities	Institute of Coastal and Offshore Engineering
Package MT4	Be River and Phuoc Hoa Fishery Management (CQS)	Research Institute for Aquaculture No 2
Package MT5	Monitoring of Water Flow of Be, Saigon and Dong Nai and Vam Co Dong Rivers	Southern Institute of Water Resources Research
Package MT6	Environmental Monitoring Programme	(JV) Southern Institute of Water Resources Planning/Research Institute for Aquaculture No. 2
Package MT7	Consultancy Services for Environmental Monitoring of Construction Contracts	(JV) Institute of Water Resources and Environment and Institute of Environment and Natural Resources
Package MT10	Building Capacity, Technology Transfer and Increasing Awareness	Southern Institute of Water Resources Research
OP4	Consultancy Services for Coordination, Supervision and Monitoring of EMP Activities	Institute of Coastal and Offshore Engineering

106. The institutions with authority over the functional domains of the Project are set out in Chapter 6 of the EMP and include, inter alia, MARD, including ICMB9; MONRE; provincial implementing agencies under MARD (the PPMBs); the Lo Go Xa Mat Management Board supported by the Southern Sub-Institute of Forest Inventory and Planning No. II (FIPI) of MARD for park and forest management; and park buffer zone management under the local communes of Hoa Hiep, Thanh Tay and Tan Binh and the Tan Bien District People's Committee. Production Forests are administered by the Phuoc Vinh Commune and Chau Thanh District, with support from Tay Ninh DARD Forest Sub-Department and FIPI. Cultural and historical preservation is administered by the Ministry of Culture and Information. Institutions are identified in the EMP for water resources management (surface and groundwater), acid sulphate soil management, pesticides and fertilizer management, industrial pollution control and fisheries.

107. Agencies that are actively engaged in implementation are MARD and its sub-agencies, such as the DARD Forest sub-units, and its implementation units. The current addendum does not suggest any variation to institutional responsibilities established under the original loan with the exception of a direct role for the provincial office of MONRE in Long An Province in more enforcement of industrial pollution control regulations for industries located within the project irrigation areas, as described in Sec. 5.3.

A. TRAINING PROGRAMMES

108. Training programmes were developed based on an assessment of training requirements for provincial and district staff in integrated pest management (IPM), nutrient management and watershed and forest protection.

1.1.3 Integrated Pest Management and Nutrient Management

109. These two topics (integrated pest management and nutrient management) are described under one heading because it is recommended that training for both be combined into a single workshop course.

110. IPM is defined in the open literature as "the coordinated use of pest and environmental information to design and implement pest control methods that are economically, environmentally and socially sound. IPM promotes prevention over remediation and advocates integration of at least two or more strategies to achieve long-term solutions." The proposed IPM training programme is aimed at "training-of-trainers" and has two objectives: one is to produce trainers in "Farmer Field School" (FFS) methodology to extend IPM to the field level; the other is to provide trainers with practical information on producing fruits and vegetables according to international standards, such as those in the World Trade Organization's (WTO) Sanitary and Phytosanitary (SPS) Agreement.

111. Nutrient management (NM) has various possible meanings. In environmental terms it refers to the management (control) of nutrients (nitrogen and phosphorous) in a watershed or catchment to prevent excessive run-off and stimulation of eutrophication (over-enrichment and consequent algal growth) in lakes. The problem rarely affects rivers as flow conditions result in mixing of the water column, limiting the effects of sunlight in the production of algae¹⁵. Hence nutrient management strategies

¹⁵ N, P and sunlight are essential ingredients in the production of algae, and any one can be 'limiting'. N and P do not otherwise exert significant oxygen demand (N more so than P) and are not generally involved in the degradation of river water quality, except in specific forms (such as ammonia) and concentrations where aquatic toxicity becomes a factor (>5 mg-NH₄/L).

that aim at improving surface water quality may be beneficial in the watersheds of the Phuoc Hoa and Dau Tieng Reservoirs, but have little benefit in lower reaches of the system. NM may also loosely refer to the proper dosage and application of fertilizers to reduce wastage, improve crop production, and prevent contamination of ground-water with nitrate-nitrogen, which has a direct health impact when the groundwater is consumed¹⁶. Finally, NM may involve use of buffer zones and set-back limits for agricultural activity and animal husbandry near lakes and rivers, in order to limit runoff, a difficult precaution to enact even in developed countries.

1. Topics for training-of-trainers

112. The topics are taught in an integral fashion. Some topics may be covered sufficiently by existing training manuals and guidelines available in Vietnamese and in use through other MARD programmes.

1. Organizing and Implementing Farmer Field Schools

Integrated crop management and agro-ecosystem analysis form the basis of FFS. FFS training is generally held on one day per week and farmers come together to become familiar with the interaction of soil fertility, irrigation, chemical fertilizers and nutrients; and to recognize specific pests and insects, their life cycles and action thresholds. IPM is taught at the grassroots level through FFS. Participants would be taught approaches for organizing and implementing farmer-field schools, including development of training modules and core teaching materials, and scheduling and conducting the FFS training.

2. Training in Integrated Pest Management

The participants would be taught how to train farmers in the techniques of IPM. Training should include knowledge of pests and multiple strategies for their control; and handling and disposal of pesticides to reduce safety, health and environmental effects. Some basic instruction on the transport and fate of pesticides in the environment could also be provided. Standard modules are available in Vietnamese.

3. WTO quality standards and the WTO Sanitary and Phytosanitary (SPS) Agreement

The SPS Agreement describes measures taken by WTO members to protect human, animal or plant life or health from risks stemming from international trade, which include those from the entry, establishment, or spread of pests (including weeds), diseases and disease-carrying organisms; or additives, contaminants (including pesticide and veterinary drug residues and extraneous matter), toxins or disease-causing organisms found in residual amounts on crops for export. The World Bank found that developing countries that have adopted international standards have maintained or improved their access to markets for agricultural commodities, and are in a good position to continue to do so.

4. Nutrient Management

Trainers would be taught the basic principles and objectives of nutrient management, including proper timing and dosage of chemical fertilizers for ensured uptake improved crop yield; use of organic fertilizers as substitute for chemicals; mechanisms of release in the soil; modes of transport into lakes rivers and

¹⁶ WHO nitrate standard for drinking water is 50 mg-NO₃/L.

groundwater; and effects of nutrients on water quality and their human health and environmental implications.

2. Materials and Presentation

113. There are standardized training materials for IPM available through the Plant Protection Department of MARD. Training materials will need to be devised for FFS and for WTO quality standards with respect to chemical residuals and pests. Training materials for nutrient management also will need to be devised based on priorities in teaching. Trainers generally are available through the Plant Protection Department of MARD to perform the training-of-trainers.

3. Attendees and Duration

114. Proposed participants for the training-of-trainers workshop include staff of the Provincial Plant Protection Department (PPPD) under DARD from Tay Ninh, Long An, Binh Duong and Binh Phuoc provinces (each PPPD 5 people); staff of the Agricultural Extension Centre (AEC) from Tay Ninh, Long An, Binh Duong and Binh Phuoc provinces (each AEC 5 people); and staff of the Plant Protection Divisions (PPDs) of Tan Bien District (Tay Ninh) and Duc Hoa District (Long An) (each PPD 10 people); for a total of 60 persons. The workshop can be presented in one week, with some time allowed for field demonstration.

1.1.4 Watershed and Forest Protection

115. Watershed management is the process of creating and implementing plans, programs, and projects to sustain and enhance watershed functions that affect plant, animal, and human communities within a watershed boundary. Features of a watershed that are to be managed include forest, crop and ground cover, especially at or near water bodies, means for minimizing nutrient and sediment runoff from watersheds, and, to a lesser extent, topics pertaining to water resources management, such as water supply, water quality, drainage, stormwater runoff, water rights, and the overall planning and utilization of watersheds. The training is expected to take place at the community level to raise awareness among communities, commune/district officials and other stakeholders living in upland watersheds (e.g. the Phuoc Hoa and Dau Tieng reservoir watersheds)¹⁷.

4. Topics for Training

116. Topics relevant to watershed management and forest protection are being adequately covered by the workshops under MT10 Building Capacity, Technology Transfer and Increasing Awareness described in Sec. 7. Topics include the role of forest management and reforestation in limiting nutrient and sediment runoff, the environmental objectives of watershed management, and actions undertaken under the project to ward off watershed degradation and to account for water rights and water quality in downstream areas. There is no need to extend the training in these topics beyond what is offered by MT10.

5. Materials and Presentation

117. Materials have been developed by the MT10 Contractor and are presented by its trainer in PowerPoint format.

6. Attendees and Duration

118. The workshops provided by MT10 include two per province, one directed at provincial and district officials and one at commune and community members. Gov-

¹⁷ Watershed management is generally not applicable to downstream communities, though some of the topics may apply.

ernment agencies in attendance include provincial DARD and DONRE officials, the provincial Forest Protection Department, and provincial Forestry and Fisheries Divisions, in addition to project representatives. Participants in the community workshop include the CPC, Fatherland Front, the District Environment Office, the District Agriculture Department, Women, Youth and Farmers Associations, and individual farmers. About 60 persons are expected to attend each workshop, which last a single day.

B. ASSURANCES

119. Assurances incorporated into Loan 2025-VIE as loan covenants related to environmental protection are shown in Table 10. These assurances, as appropriate, should be carried over into the supplementary loan.

Table 10: Loan Covenants related to Environmental Protection

Sec. 4.09	The Borrower shall ensure that the Project facilities are operated, maintained and repaired in accordance with sound administrative, financial, engineering, social, environmental, agricultural, and maintenance and operational practices.
Sched. 6, para. 2	The CPO shall establish a multidisciplinary project management unit (the PMU) for day-to-day supervision of the Project which shall be headed by a full time resident manager who shall be a deputy director and shall include experienced staff members of CPO. Other PMU staff may be CPO staff or sub-contracted locally. The PMU shall be responsible for implementing the EMP and shall sub-contract this task to an appropriate local institute agreed with the Bank.
Sched. 6, para. 11	The Borrower shall take all measures necessary to ensure that: (a) the minimum environmental flow as agreed between the Bank and the Borrower, shall be released at all times for the Be River in order to minimize the impact on water quality in the Be River downstream of the Phuoc Hoa Barrage; and (b) adequate treatment of effluent from industries located along the Be River in accordance with the Borrower's regulations prior to the start of work to divert the Be River.
Sched. 6, para. 12 (a) & (b)	The Borrower shall ensure that (a) protective measures for the Lo Go Xe Mat National Park and forest areas in Tan Bien district will be strengthened, the buffer zone management program for the National Park will be implemented, and strict controls applied to safeguard against increasing acidity levels in the relevant waterways and rivers from irrigated agriculture by farmers; and (b) water quality monitoring is carried out in accordance with the EMP to verify that any agriculture activities in the acid sulphate soils are not causing acidity levels to increase above acceptable limits as prescribed in the EMP.
Sched. 6, para 13	The Borrower shall ensure that: (a) the EMP complies with the Bank's policies and guidelines for Environmental Impact Assessments and mitigation measures, and is updated during the first year of the Project, incorporating up-to-date data that are being collected under ongoing programs, including data from water quality monitoring and forest surveys, and earlier surveys; and (b) all measures necessary for the satisfactory mitigation of environmental impacts are implemented in accordance with the requirements of the Borrower and the Bank.
Sched. 6, para 14	The PMU shall sub-contract local institutes to be agreed with the Bank, to carry out the work on its behalf, in order to implement and monitor all mitigation and monitoring measures detailed in the EMP to a standard satisfactory

	to the Bank.
Sched. 6, para 15	The Borrower shall submit the updated EMP for Bank approval within 12 months from effective date and ensure that it is implemented and monitored to a standard satisfactory to the Bank.

120. A modification of the assurance pertaining to control of wastewater flows found in Table 10 (Schedule 6, para 11) extends the assurance to cover all the project area, not just Be River, as follows:

- The Borrower shall take all measures necessary to ensure that: (a) the minimum environmental flow as agreed between the Bank and the Borrower, shall be released at all times for the Be River in order to minimize the impact on water quality in the Be River downstream of the Phuoc Hoa Barrage; and (b) adequate treatment will be provided of effluent from industries and urban areas located along the Be River and at other locations where industries and urban settlements benefit from domestic, municipal and industrial (DMI) water, in accordance with the Borrower's regulations.

C. SUMMARY OF RECOMMENDATIONS AND CONTRACT AMENDMENTS

121. Recommendations made in this report can be encompassed in the ongoing EMP contracts MT7 and MT10 as described below. EMP Contracts Nos. MT7, MT10 and OP4 should be extended to accommodate the anticipated schedule for Phase 2.

122. Recommendations in respect to the performance of MT7 during Phase 2 include the following. Cost is included in contract extension (see below).

- Increase the presence of the EMP MT7 contractor in the field to provide one or two full time field personnel depending on the number and size of active contracts, transport and per diem, and basic monitoring equipment, to improve verification monitoring of contractor's reporting, provide regular visits to active construction zones, inspect basic provisions contained in the EMP and participate in activities related to the grievance redress mechanism. (\$10,000)¹⁸
- Report on verification monitoring in separate sections of the report from contractor-produced monitoring data. (no extra cost)

123. Recommendations in respect to the continuance of MT10 implementation into Phase 2 include the following. Cost is included in contract extension (see below).

- Extend the scope of the contract to provide public consultation during the implementation phase and facilitate disclosure of the grievance mechanism (no extra cost).
- Extend the scope to provide training in IPM and nutrient management alongside other topics to members of the downstream communities within target irrigation areas. (\$5,000)
- Insure that recommendations found in the WB/IFC *Environmental, Health and Safety Sector (Agriculture) Guidelines* incorporated into training: agricultural

¹⁸ Note these costs are carried forward and summarized in a later paragraph.

biodiversity (para. 23), nutrient management (para. 31) and IPM (para. 43).
(no extra cost)

- Provide a budget for dissemination of printed literature on key environmental topics in the respective areas of the project. (\$3,000)
- Assure that reporting under MT10 and its follow-on reporting (OP4 and Implementation Consultant reporting) explicitly address discussions, comments, questions, complaints and follow-up actions arising from workshops organized under the contract. (no extra cost)

124. Recommendations in respect to the creation and administration of a grievance redress mechanism for environmental complaints include:

- Facilitate access through appointment of a Grievance Point Person (GPP) in the ICMB9 prior to construction to handle grievances and to disclose the grievance procedure to local communities.
- Include in construction EMPs that contractors will include the grievance procedure in the construction EMP, appoint a GPP under the contractor during construction, and will follow the procedures prescribed in Sec. 3 with respect to documenting the grievance; informing the complainant; review, investigation and resolution; and monitoring, reporting and evaluation.
- Inform commune people's committees (CPCs) of their role in assisting the grievance mechanism.
- Assure that Operating Enterprises (the Irrigation Management Committees) are familiar with and facilitate the grievance mechanism during the operations stage of the project.

125. Recommendations in respect to training include preparation and presentation of a training-of-trainer's workshop to address integrated pest management (IPM) and nutrient management, with duration of one week and attendance of 60 persons from provincial and district agencies. No special training is recommended for watershed and forest protection, as the topic is adequately covered in ongoing MT10 work.

126. Assuming an end date of the Phase 2 Project of June 2014, the proposed contract extensions are as follows: (see project Schedule in Sec. 0)

- MT7, Construction Environmental Monitoring, extend for 21 mos (to end of Phase 2), estimated cost is \$43,750 plus \$10,000 for scope changes for a total of \$53,750.
- MT10, Building Capacity, Technology Transfer and Increasing Awareness, extend for 10 mos (to April 2012), estimated cost is \$13,500 plus \$8,000 for scope changes for a total of \$21,500.
- OP4, Regulation, Supervision and Synthesis for Packages of Environmental Management, extend for 9 mos (to end of Phase 2), estimated cost is \$5,400.

D. SUMMARY OF COSTS

127. The costs associated with environmental protection under Phase 2 are related to extension of EMP contracts and changes of scope as described in this report, and

support for local agencies (Commune People's Committees and the Long An DONRE) for specific tasks. These are incremental costs that add to, rather than replace, costs associated with environmental protection under the original loan, which remain committed. Costs are set out in Table 11.

Table 11: Environmental Costs Associated with Phase 2

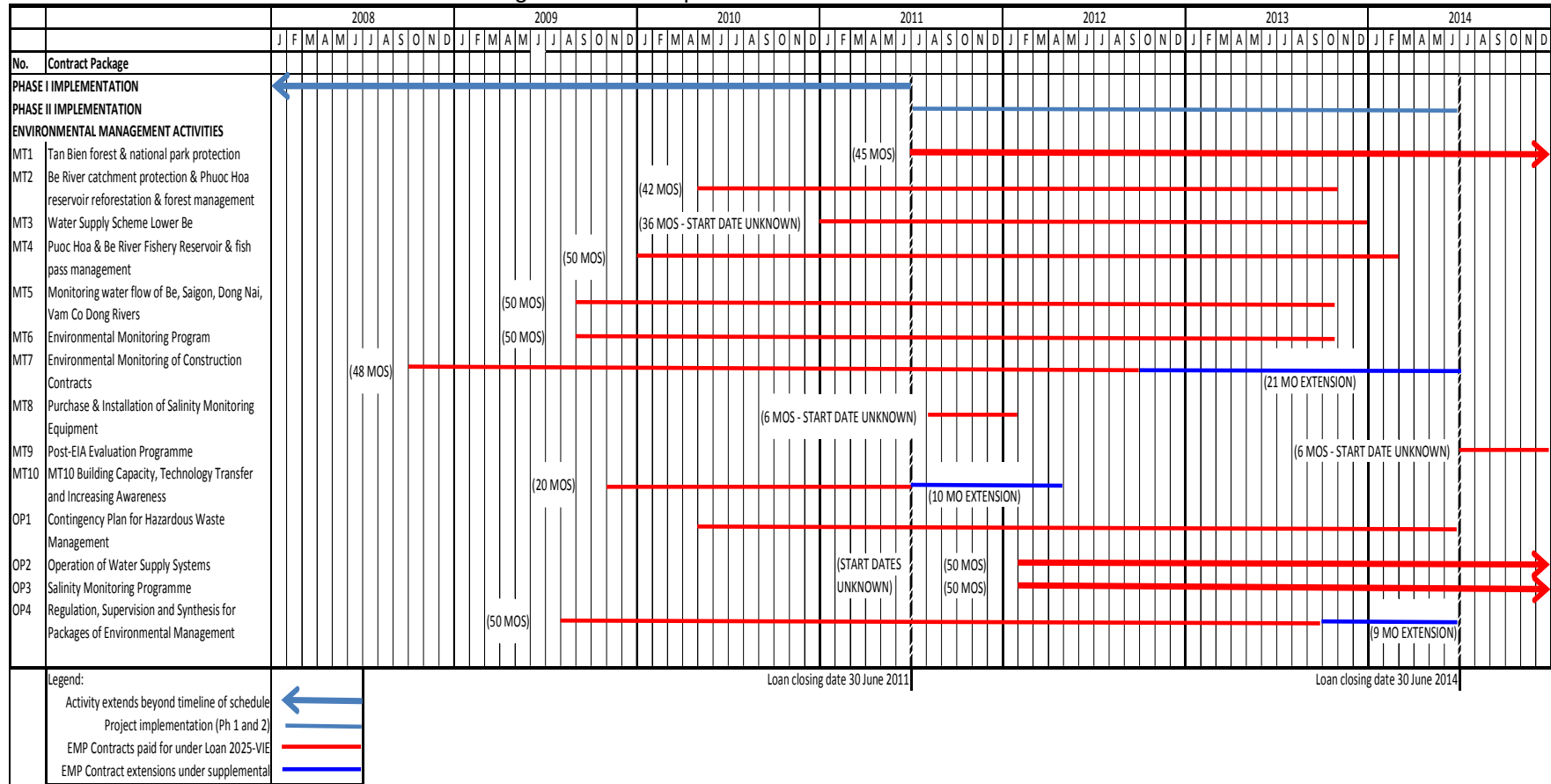
<i>Item</i>	<i>Amount</i>
Extension of MT7 Scope and Duration	\$53,750
Extension of MT10 Scope and Duration	\$21,500
Extension of OP4 Duration	\$5,400
Total	\$80,650

E. IMPLEMENTATION SCHEDULE

128. The implementation schedule in Figure 2 for environmental activities under Phase 2 shows phasing and coordination of EMP activities with the overall project. Some aspects of the schedule are uncertain as some of the EMP contracts have not yet been awarded. Operations contracts nos. OP2 and OP3 depend on completion of the installation of equipment under contracts MT3 and MT8, respectively.

129. Only some of the contracts are directly applicable to Phase 2 of the Project, specifically MT1, MT6, MT7, MT9, MT10, OP1 and OP4. Of these, only MT6, MT7, MT10 and OP4 have begun work. Extensions are recommended for three contracts, specifically MT7, MT10 and OP4, and are shown on the schedule.

Figure 2: EMP Implementation Schedule for Phase 2



VI. FINDINGS, RECOMMENDATIONS AND CONCLUSION

130. The Environmental Management Plan (EMP) was prepared as part of the Environmental Impact Assessment (EIA) for the Phuoc Hoa Water Resources Project. The environmental assessment process for this project unfolded over a period of 10 years alongside project development, resulting in numerous EIA reports reflecting increasing levels of refinement. The EMP, as a separate document, was revised in the latter half of 2007, in response to a request from the ADB. MONRE approved the EIA in March 2008 with conditions that substantially agree with the contents of the EMP in respect to potential impacts and recommended mitigation measures.

131. A request has been made by the Government for supplemental lending to complete construction of the Project. To honour the request, the ADB requires review of the proposed activities and Environmental Management Plan (EMP) relevant to the Phase 2 development, in particular, review of the 14 existing EMP consulting packages in construction and operation phases. The results of this review relate to the performance of the project to-date in respect to environmental matters and, along with other aspects, constitute the findings.

132. The ADB Safeguard Policy Statement was issued in Dec 2009 with affectivity on future lending, requiring i) review of the mitigation measures for Phase 2 components based on the SPS requirements, with ii) update where necessary of the EMP for Phase 2 activities, and iii) proposal of any revision/addition of the 14 EMP consulting packages to meet the requirements of the updated EMP. Topics highlighted for special attention include those explicit in the SPS, training requirements in sustainable agriculture and resource management, institutional arrangements, and a grievance redress mechanism. The outcome of this effort constitutes the recommendations.

133. Conclusions concern the overall applicability of the review in respect to ADB and Government of Vietnam requirements.

1. Findings

1.1.5 Critical Impact Issues Raised in the SPS

134. The EMP provides safeguards for protection of biodiversity, modified, natural and critical habitats and legally protected areas, as well as management and use of renewable natural resources. Invasive species pose no threat since none will be intentionally introduced through the Project.

135. Legally protected habitats in the project area include the Lo Go Xa Mat (LGXM) National Park and production forest reserves Nos. 67 and 68 in Tay Ninh Province. Annex 1 of the EMP provides the approach for mitigation of forest loss, encroachment and degradation of biodiversity in these areas. The ICMB9 plans to begin work on its related EMP Contract (MT1) coincident with Phase 2 of the Project.

136. Renewable natural resources management is built into the program through numerous components of the EMP contracts, through development of water user groups and communities (WUG/C) and through the OSDP. MT9 (Annex 12 of the EMP), the Post-EIA Evaluation Programme, is aimed at independent certification of efficacy in EMP programmes and measures.

137. Pollution prevention and abatement is addressed during construction through requirements on the construction contractor to abate pollution from its operations. Pollution prevention during operations involves identification and avoidance of acid sulphate soils and proper application and handling of agrochemicals through training in IPM and nutrient management. Water is supplied for domestic, municipal and industrial (DMI) use requiring a means for controlling pollution from urbanized areas and industry. A modification of an assurance under the original loan from the Government is proposed in this regard. GHG emissions are estimated for the project, amounting to some 0.03% of Vietnam's 2000 GHG emissions inventory; however there is extensive uncertainty associated with this estimate.

138. Occupational and community health and safety are adequately dealt with by construction impact mitigation measures, traffic controls in community areas, safety guidelines related to pesticide use (part of IPM training), and health and safety in the farm environment provided through the OSDP programme.

139. Protection of physical cultural resources is provided for in the EMP through guidelines for design teams and contractors that mitigate direct impact, and a chance-find protocol that describes actions by the contractor when historical or archaeological relics are unearthed.

140. Summaries of Impacts and mitigation measures, and monitoring requirements, are included in the format specified in the ADB Environmental Impact Assessment Guidelines (2003). Environmental reporting procedures set up under Phase 1 will be continued through Phase 2.

1.1.6 EMP Contracts

141. EMP Contracts are used to meet the requirements for mitigation and monitoring set out in the annexes of the EMP. Seven contracts are underway; one involves post-project monitoring (MT9), hence will not begin until the Project nears completion; one is available as a contingency (OP1), and may not be needed; and two, involving purchase of equipment, are coupled to operations contracts (MT3/OP2 and MT8/OP3). From an environmental perspective, the most important project yet to get underway is MT1 related to Tan Bien forest and LGXM National Park protection; it is scheduled to begin in July 2011 along with the start of Phase 2. Seven of the 14 EMP contracts are related to Phase 2 activities; of these, four are underway (MT6, MT7, MT10 and OP4).

142. MT6 provides for broad-ranging water quality monitoring in the Project's rivers, and will produce its first semi-annual report in July 2010. MT7 provides monitoring of construction activity and began in Oct 2008. It has been effective in producing semi-annual construction monitoring reports, which are combined with other current environmental monitoring data for the semi-annual report prepared under OP4 (Regulation, Supervision and Synthesis for Packages of Environmental Management). This reporting supports the semi-annual monitoring report that is submitted to the ADB by the ICMB9, prepared by the Project Supervision Consultant. MT10 (Building Capacity, Technology Transfer and Increasing Awareness) provides a much needed public participation component on the Project; its first progress report on workshops held in Binh Phuoc Province is available.

1.1.7 Implementation Arrangements

143. The implementation arrangements for the EMP are set up under the current loan and will be continued into Phase 2. These include an Environmental Unit at the ICMB9, supported by an Environmental Specialist within the office of the Supervision

Consultant, with technical work conducted under contract by regional Vietnamese institutions. PPMB staff may take on tasks related to environmental protection if there is a need to do so. The construction contractors also are engaged in implementing the EMP. Contractors are required to prepare a construction EMP that substantially meets the requirements of the EMP, and to monitor the results of mitigation measures undertaken during construction.

2. Recommendations

144. Three EMP contracts (Nos. MT7, MT10 and OP4) should be extended into the timeframe for Phase 2, and the scopes for two contracts (MT7 and MT10) should be expanded to provide additional and more reliable outputs. MT7 requires additionally 21 mo for construction environmental monitoring through to the end of Phase 2. Additional fulltime field staff should be used to increase verification monitoring of data reported by the construction contractors regarding mitigation measures. MT10 should be extended 10 mo to sustain public consultation over the construction phase and to organize training in IPM and nutrient management. OP4 should be extended nine mo to provide coordination and reporting on EMP contracts through Phase 2.

145. Training of provincial and district plant protection staff should be conducted using an approach for training-of-trainers, with focus on farmer field schools, integrated pest management, and nutrient management.

146. A grievance redress mechanism is proposed that utilizes a Grievance Point Person (GPP) in the ICMB9 prior to construction, with responsibilities shifting during construction to GPPs that are part of the management teams of the contractors. The ICMB9 GPP is responsible for disclosure of the grievance mechanism prior to the start of construction. GPPs working for the construction contractors are responsible for receiving and documenting the grievance; informing the complainant of their rights under the procedure; review, investigation and resolution of the complaint; and reporting, monitoring and evaluation. The grievance procedure to be undertaken during operations will be the responsibility of the Irrigation Management Committees of Duc Hoa and Tan Bien. PPCs have a backup function in regard to the grievance procedure during all phases of the Project.

3. Conclusion

147. Since there is no change in the project scope, the environmental classification as Category A remains as originally set out; the present addendum is aimed at assuring compliance with the 2009 Safeguard Policy Statement and providing necessary review in preparation for supplemental lending. Because the supplemental loan does not constitute a "project" under Vietnamese law, there is no requirement to submit further evidence in regard to environmental protection to the MONRE for the supplemental loan.

Appendix A
Translation of Decision Approving the EIA

MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT No. 399/QD-BTNMT	SOCIALIST REPUBLIC OF VIET- NAM Independence - Freedom - Happiness
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Hanoi 11 March 2008

DECISION

On approval of EIA of Phuoc Hoa Irrigation Project submitted by the Water Resource Investment and Construction Management Board No. 9

THE MINISTER OF MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT

Pursuant to the Law on Environmental Protection dated November 11, 2005;

Pursuant to Decree No. 80/2006/ND-CP dated August 9, 2006 on detailing and guiding the implementation of a number of articles of the Law on Environmental Protection

Pursuant to the Government's Decree No 91/2002/ND-CP, dated November 11, 2002, on the functions, responsibilities, competencies and organizational structure of the Ministry of Natural Resources and Environment (MONRE);

Pursuant to Circular No. 08/2006/TT-BTNMT dated on 08 September 2006 of the Ministry of Natural Resources and Environment on detailed guiding on Strategic Environment assessment, Environment Impact assessment and registration of Environment protection commitment;

According to the request of appraisal committee for Phuoc Hoa Environmental Impact Assessment report dated May 12, 2007;

Considering revised and supplemented content of Phuoc Hoa Environmental Impact Assessment report and official letter No. 500 CV/BQL dated September 13, 2007 of Water Resource Investment and Construction Management Board No.9- Ministry of Agricultural and Rural Development;

According to the request of the Director of the Appraisal and Environmental Impact Assessment Department:

DECISION

Article 1. Approval of content Phuoc Hoa EIA report of ICMB 9 – Ministry of Agriculture and Rural Development (hereafter called Project owner)

Article 2: The project owner is responsible to implement the contents listed in EIA report and obligated requirements as follows:

1. During the project construction phase:

Implement compensation measures and resettlement issues according to present regulation

Plan and design stock pile, material/fuel storage properly to avoid leakage into surrounding environment.

Collect and treat domestic wastewater from construction site by septic tank before discharging into environment. Collect and dispose domestic solid waste and construction waste from construction site according to present regulation.

Keep and store explosive materials in accordance with the provisions of the safety site and distance. Implement measures and safety warnings during mine explosion.

Clean Phuoc Hoa reservoir bed in accordance with the current provisions on clearance of irrigation and hydropower reservoir.

Do not destroy green cover outside construction area.

2. During operation phase:

Only transfer water from Be River to Dau Tieng reservoir based on practical use demand of irrigation area and other water use demand while ensuring meeting water demand at downstream of Be river, behind Phuoc Hoa Dam. Non use water should be discharged into downstream of Be river.

During exploitation and use process of Phuoc Hoa irrigation scheme, the project owner should consider and regulate minimum flow discharged into downstream of Be river appropriately for the specific times during the year and for different development periods on the whole river watershed. The project owner should guarantee:

- Discharge flow to downstream of Be river during dry season is not smaller than $14 \text{ m}^3/\text{s}$

- Coordinate operations with reservoir and hydro-power plant owners in Dong Nai- Saigon river system to meet discharge flow to downstream of Dong Nai river not smaller than $300 \text{ m}^3/\text{s}$ and to downstream of Sai Gon river below Dau Tieng reservoir not smaller than $40 \text{ m}^3/\text{s}$.

In the case where water shortage or deeply salinity intrusion at downstream of Dong Nai river causes negative impact on water supply plans, or on other economic and human activities, the project owner is responsible to coordinate with related organizations to increase water flow discharged into downstream of Dong Nai river. When necessary, stop transferring water into Dau Tieng reservoir and discharge water into downstream of Be river to combat salinity intrusion and to supply water to downstream of Be and Dong Nai river.

The project owner needs to design and submit to responsible authority for approval of water regulation of Phuoc Hoa reservoir to meet requirements in 2.1, 2.2, and 2.3.

The project owner is responsible to coordinate with all related organizations and provinces in establishing a management unit responsible for water exploitation/use/transfer in the whole watershed of Dong Nai-Sai Gon Rivers and for dealing with emergency cases and salinity intrusion.

Early warning system should be in place for communities and related target groups about time and areas may be affected by flood during rainy season to prepare prevention and resettlement measures.

Dredging reservoir bed regularly and disposing sludge properly.

Plant tree in the reservoir belt to prevent shore erosion; grow new forest and additional protection forest at surrounding reservoir area.

3. Comply in full with the information and reporting regime on implementation of contents raised in the approved EIA, the requirements listed in this Decision and related regulations from Decree No. 80/2006/ND-CP dated August 9, 2006 of MONRE on detailing and guiding the implementation of a number of articles of the Law on Environmental Protection and Circular No. 08/2006/TT-BTNMT dated on 08 September 2006 of the Ministry of Natural Resources and Environment on detailed guiding on Strategic Environment assessment, Environment Impact Assessment and registration of Environment Protection Commitment. Special attention should be paid to water quality monitoring at downstream of Be river behind Phuoc Hoa dam and downstream of Dong Nai river to ensure provision of information and on-time implementation of prevention measures in case of occurring environmental pollution and environmental incidents.

Article 3: The Project EIA and the obligated requirements from Article 2 of this Decision serve as a basic for the State authorized organization in controlling/inspecting the implementation of Environmental protection measures of the Project.

Article 4: In the case some contents of the approved EIA have been changed during the project implementation period, the project owner needs to report and can implement the changes only when getting approval from MONRE.

Article 5. Delegate Environmental Protection Agency leads and coordinates with Binh Phuoc, Binh Duong, Tay Ninh, Dong Nai, HCM city DONREs and related organizations under MONRE control/monitor and certify the implementation of contents listed in the approved EIA and in the Article 2 of this Decision.

Article 6. This Decision is valid for implementation from signed date

<p>Recived by:</p> <ul style="list-style-type: none">- ICMB 9- MARD- Binh Phuoc, Binh Duong, Tay Ninh, Long An, Dong Nai, HCM city PPCs- Binh Phuoc, Binh Duong, Tay Ninh, Long An, Dong Nai, HCM city DONREs- VEPA, Ministerial Inspection- Keep in administrative office and others	<p>ON BEHALF OF THE MINISTER VICE-MINISTER</p> <p>Nguyen Cong Thanh</p>
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Appendix B

Sample Grievance Action Form (GAF)

Name: _____

Address: _____

Phone: _____

Date: _____

Project site: _____

Province: _____

District: _____

Commune: _____

Name and position of recipient: _____

Date of last disclosure meeting:

Category of grievance:	Environment	Financial	Administrative
1. Inadequate information			
2. Inadequate consultation			
3. Inadequate participation			
4. Inadequate representation			
5. Inadequate communication			
6. Inadequate consultation			
7. Inadequate participation			
8. Inadequate representation			
9. Inadequate communication			
10. Inadequate consultation			
11. Inadequate participation			
12. Inadequate representation			
13. Inadequate communication			
14. Inadequate consultation			
15. Inadequate participation			
16. Inadequate representation			
17. Inadequate communication			
18. Inadequate consultation			
19. Inadequate participation			
20. Inadequate representation			
21. Inadequate communication			
22. Inadequate consultation			
23. Inadequate participation			
24. Inadequate representation			
25. Inadequate communication			
26. Inadequate consultation			
27. Inadequate participation			
28. Inadequate representation			
29. Inadequate communication			
30. Inadequate consultation			
31. Inadequate participation			
32. Inadequate representation			
33. Inadequate communication			
34. Inadequate consultation			
35. Inadequate participation			
36. Inadequate representation			
37. Inadequate communication			
38. Inadequate consultation			
39. Inadequate participation			
40. Inadequate representation			
41. Inadequate communication			
42. Inadequate consultation			
43. Inadequate participation			
44. Inadequate representation			
45. Inadequate communication			
46. Inadequate consultation			
47. Inadequate participation			
48. Inadequate representation			
49. Inadequate communication			
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84. Inadequate representation			
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86. Inadequate consultation			
87. Inadequate participation			
88. Inadequate representation			
89. Inadequate communication			
90. Inadequate consultation			
91. Inadequate participation			
92. Inadequate representation			
93. Inadequate communication			
94. Inadequate consultation			
95. Inadequate participation			
96. Inadequate representation			
97. Inadequate communication			
98. Inadequate consultation			
99. Inadequate participation			
100. Inadequate representation			

Legal

Technical

Financial

Social

Administrative

Other

[illegible]

