Initial Environmental Examination

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Viet Nam: Water Efficiency Improvement in Drought Affected Provinces

Ninh Thuan Province

Thanh Son – Phuoc Nhon Subproject
Nhon Hai – Thanh Hai Subproject

Prepared by the Central Office for Water Resources Projects (CPO) - Ministry of Agriculture and Rural Development for the Asian Development Bank

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AH	affected household
AP	affected person
cm	centimeter
COD	chemical oxygen demand
CPC	Communal People's Committee
CPO	Central Office for Water Resources Projects
CPMU	Central Project Management Unit
CSC	construction supervision consultant
DARD	Department of Agriculture and Rural Development
DONRE	Department of Natural Resources and Environment
DPC	District People's Committee
EA/IA	executing agency/implementing agency
EHS	Environment, Health, and Safety Guidelines
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EM	ethnic minority
EMP	Environmental Management Plan
EMR	environmental monitoring report
EPP	Environmental Protection Plan
ESP	Environment Safeguard Specialist
H	hour
ha	hectare
HDPE	high density polyethylene
HVC	high value crop
IEE	initial environmental examination
IEMC	independent environmental monitoring consultant
IMC	Irrigation Management Company
IWRP	Institute of Water Resources Planning
km	kilometer
km^2	square kilometer
l/s	liter per second
l/s/ha	liter per second per hectare
LIC	Loan Implementation Consultant
LOS	level of service
m	meter
m/ha	meter per hectare
m^3	cubic meter
m^3/s	cubic meter per second
mm	millimeter
MARD	Ministry of Agriculture and Rural Development
MONRE	Ministry of Natural Resources and Environment
PCC	People's Committee and Commission
PIC	project implementation consultant
PMU	Project Management Unit
PPC	Provincial Peoples Committee
PPE	personal protective equipment
PPMB	Provincial Project Management Board
PPMU	Provincial Project Management Unit

PPTA	project preparation technical assistance
QCVN	Quy chuẩn kỹ thuật (National Technical Regulation)
ROW	right-of-way
RP	resettlement plan
SEA	strategic environmental assessment
SEMP	Site Environment Management Plan
SERD	Southeast Asia Department
SPS	Safeguard Policy Statement
TMIS	Tan My irrigation system
WEAT	water efficient application technologies
WEIDAP	Water Efficiency Improvement in Drought Affected Provinces

NOTE

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EXECUTIVE SUMMARY

A. Subproject Background

1. The proposed Water Efficiency Improvement in Drought Affected Provinces (WEIDAP) Project aims to improve agriculture water productivity (crop per drop) by increasing water use efficiency in irrigated agriculture in five droughts affected provinces in the Central Highland and South Central Coastal Regions: Binh Thuan, Dak Lak, Dak Nong, Khanh Hoa, and Ninh Thuan. The project is aligned with the Government's *Agricultural Restructuring Policy*, the *Law on Hydraulic Structures (LHR)*, and the *Irrigation Subsector Restructuring Plan (ISRP)*.[1] The project features: (i) increasing water productivity with the reduction of conveyance losses made possible by piped distribution systems and substantial improvement in operational control; (ii) increased adoption of water efficiency application technologies (WEAT) for climate mitigation, which are also effective in saving energy (through reduced fertilizer applications) and achieving significant labor reductions; (iii) conjunctive use of surface and groundwater–a pragmatic acknowledgement of current irrigation practices and farmers' coping strategies during periods of increasing climate variability; and (iv) reduced operation and maintenance (O&M) – rigorous asset management is central to project design and provides greater confidence in sustainability of benefits.

2. Ninh Thuan Province has two subprojects, including the construction of a new gravity piped systems in Thanh Son-Phuoc Nhon (TSPN) and Nhon Hai-Thanh Hai (NHTH). The command area will be 1,800 hectares (ha) for the TSPN subproject and 1,000 ha for the NHTH subproject. The subprojects will comprise buried high-density polyethylene (HDPE) or polyvinyl chloride (PVC) pipelines off-taking from the main steel pipeline provided by the Tan My irrigation project. The pipelines will be aligned in their command areas to provide a uniform level of service (LOS), following the design criteria adopted for WEIDAP, specifically, 60-millimeter (mm) diameter hydrants at 50-100 meter (m) intervals, commanding areas on either side of the pipeline, with no field being more than 500 m from a hydrant. Hydrant flows will be about 5 liter per second (l/s).

B. Environmental Impacts and Mitigation

3. The subproject has been categorized as B for environment safeguards during the Project Concept Note stage as few significant impacts were identified and none of them irreversible. This initial environmental examination (IEE) was prepared to screen impacts and formulate mitigation measures in three phases of subproject implementation: design/pre-construction, construction, and operation. The institutional arrangements were formulated to ensure that the subproject Environmental Management Plan (EMP) is properly implemented.

4. In the design and pre-construction phase, the identified potential impacts are related to land acquisition and resettlement. Approximately 27 ha of land planted to perennial and annual crops will be permanently affected by the subproject, although no household will have to relocate.[2] To minimize the impacts, the Central Project Management Unit/Provincial Project Management Unit (CPMU/PPMU) will carry out the land acquisition and compensation process before the start of construction start to ensure that all affected households receive adequate compensation in a timely manner, in accordance with the current provincial market price and the Asian Development Bank (ADB) *Safeguard Policy Statement (SPS)* (2009).

5. During the construction phase, the potential negative impacts identified are the following: (i) disturbance of cultivation activities during pipeline installation: (ii) environmental effects from

[1] Ministry of Agriculture and Rural Development (MARD) *Decision No. 802/QD-BNN-TCTL* of 22 April 2014 approving the *Implementation Action Plan for Irrigation Subsector Restructuring Scheme.* Hanoi, Government Publishing Office.

[2] PPTA Resettlement Plan (RP) Report. 2017.

excavated soil, domestic, and toxic wastes if they are improperly managed at the sites; (iii) dust generation caused by excavation, levelling, and operation of construction machinery and transportation at sites; (iv) occupational and community health and safety impacts at the subproject construction sites, such as uncovered excavated holes and conflicts between locals and subproject migrant workers; and (v) damage to community roads due to heavy equipment and transportation of construction materials to the sites. To address these adverse impacts, contractors will: (i) collaborate with local people and authorities to (a) prepare a proper plan for pipeline installation through farms that are being cultivated, (b) not allow the stockpiling or gathering of materials on access roads; (ii) properly manage the excavated soil or give them to farmers for re-use; collect and sort out construction and domestic wastes at the sites for re-use, selling for recycling, or disposal at the local landfill; comply with the management of hazardous wastes, such as oil and grease, following the regulations in *Circular 36/2016/BTNMT*; (iii) suppress dust by keeping excavated soil and stockpile moist, minimize gas emissions through well-maintained machinery and vehicles; (iv) provide workers with adequate PPE when working at the sites and give them training on health, safety, and respect for community culture, especially with ethnic minority (EM) communities; and (v) rehabilitate, restore, or compensate for community roads damages by subproject construction.

6. During the operation phase, the potentially negative impacts are: (i) damage to the pipeline system as a result of cultivation activities; (ii) conflicts of water use among beneficiaries during periods of water shortage. To minimize the impacts, the operational agency, the Ninh Thuan Department of Agriculture and Rural Development (DARD) will: (i) carefully manage the pipe right-of-way (ROW) and prevent villagers from occupying the ROW for cultivation; (ii) establish or request the Central Office for Water Resources Projects (CPO) to provide a reasonable mechanism for operating the system, especially during periods of water shortage to ensure that all beneficiaries have equal opportunities to access the irrigation system.

7. The Project Preparatory Technical Assistance (PPTA) Consultant also identified key stakeholders and conducted public consultations from the provincial down to the commune levels, with a focus on the views of affected people (AP). The participants are supportive of the subprojects as the improved irrigation systems will help them cope with water shortages for their crops during summer. They did not pay much attention to environmental issues because they know that most of the civil works will be small-scale and construction work will be far from the residential areas. However, they expressed concern over land acquisition and compensation issues and the use of abundant land resources in the subprojects. All of these concerns are addressed in the EMP.

8. An EMP for each subproject was prepared as part of this IEE. The plan provides the detailed responsibilities of stakeholders in EMP implementation during the subproject construction and operation.

C. Institutional Arrangements

9. The Central Project Management Unit (CPMU) under MARD, the Dak Nong Provincial Project Management Board (PPMB) and DARD are the key institutions that will play crucial roles in the implementation of the subprojects, including ensuring environment safeguards. The Central Project Management Unit (CPMU)/Provincial Project Management Unit (PPMU) will recruit one Environment Safeguards Specialist (ESS) under the Loan Implementation Consultant (LIC) to be engaged to support subproject implementation in Ninh Thuan. The ESP will support PMU in ensuring that the EMP is updated, monitor the compliance of contractors during the construction phase, and provide training and capacity building on EMP implementation.

10. The PMU will also engage a Construction Supervision Consultant (CSC), who will be responsible for monitoring and supervision of the subproject, including environmental monitoring, and ensure that contractors implement the provisions of the subproject EMP.

D. Conclusion

11. This IEE for the Ninh Thuan Province subprojects was undertaken to determine the environmental issues and concerns associated with the proposed irrigation schemes, following the modifications of the initial plans that were presented during project preparation. The modifications made are considered more suitable in terms of ensuring better irrigation water quality and quantity. The assessment confirmed that the subproject remains classified as Category B for environment based on the ADB SPS (2009).

12. There are expected beneficial impacts on health and well-being of people from the proposed irrigation schemes in Ninh Thuan Province. Besides, most of the environmentally negative impacts are expected to occur during the construction phase, are not expected to cause irreversible and significant adverse environmental impacts, and are easily controllable through the adoption of appropriate and conventional mitigation measures. All adverse impacts will be addressed by the proposed mitigation measures outlined in the subproject EMP, including the institutional responsibilities for implementing the said measures.

13. The IEE concludes that the subproject, combined with available information on the affected environment, is sufficient to identify the scope of environmental impacts of the subproject. No further environmental assessment is therefore required. The ESP will update the EMP before finalization of the detailed design of the subproject.

I. SUBPROJECT BACKGROUND

1. Located in the south-central coast region, Ninh Thuan Province experienced a prolonged drought from 2012-2016, recorded the driest period in 40 years. The economic consequences of persistent drought in the region are significant, especially as the competition for water use is increasing across multiple sectors. Agriculture sector is the most dominant sector in the province, with the main income derived from vegetables and perennial tree crops, such as grapes and Vietnamese apples, considered more vulnerable to water shortage.

2. Under this situation, Dak Nong Province was selected among five provinces to be supported by WEIDAP. MARD, the Executing Agency (EA) supports the improvement of the management efficiency of existing irrigation works, especially in the drought-affected provinces of Viet Nam, to facilitate economic restructuring within the sector, with a specific orientation towards higher value crops and sustainable development.

3. Aligned with the Government's *Agricultural Restructuring Policy*, the LHS, and the ISRP, the subproject aims to: (i) improve the quality of service delivery in irrigation systems, promote the economic use of water and serve agricultural production with increased diversification in response to climate change; (ii) contribute to the improved productivity, quality, and development of modernized irrigated agriculture, prioritizing the main upland crops and fisheries; (iii) promote revenue generating services from irrigation works to maximize the potential and capacity of existing irrigation schemes, ensuring sustainable financing for organizations managing the exploitation of irrigation and reduced subsidies from the state budget.

4. Priority subprojects were identified during the PPTA phase. Ninh Thuan Province proposed two subprojects: Thanh Son–Phuoc Nhon (TSPN) subproject and Nhon Hai-Thanh Hai (NHTH) subproject. The TSPN subproject will install 35.85 km of pipe and its hydrants to supply gravity irrigation to 1,800 ha of command area with a water allocation of 1.8 cubic meter per second (m^3/s) coming from the Song Cai River via the Tan My irrigation pipe system. The subproject will benefit five communes in four districts: Phuoc Trung commune (Bac Ai district), Nhon Son commune (Ninh Son district), Bac Phong and Loi Hai communes (Thuan Bac district) and Xuan Hai commune (Ninh Hai district). The NHTH subproject will install a 9.5-km pipe from the Tan My pipeline system to supply gravity irrigation to 1,000 ha of command area through the main pipe and its hydrants located in the three communes of Tri Hai, Thanh Hai, and Xuan Hai of Ninh Hai district.

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

5. The subproject will comply with the requirements of ADB's SPS (2009) and Government of Viet Nam's *Guidelines on Implementation of Law on Environmental Protection,* 2014. *Decree No. 18/2015/ND-CP* has detailed information on environmental protection assessment, EIA, and environmental protection plans. However, certain activities commonly associated with infrastructure subprojects, such as quarry operations, extraction of gravel, etc., will require permission from the relevant provincial level authorities. Depending on the scale, some construction activities on the proposed road, such as bridge or spillway, may require a separate EIA.

A. ADB Requirements

6. ADB's SPS (2009) imposes safeguard requirements for all its funded projects. The SPS (2009) clarifies the reason, scope, and contents of the environmental assessment. It emphasizes environmental and social sustainability in pursuit of economic growth and poverty reduction in Asia and the Pacific. Therefore, the objectives of the SPS are to:

- Avoid adverse impacts of projects on the environment and AP, where possible;
- Minimize/mitigate and/or compensate for adverse impacts on environment and AP when avoidance is not possible; and
- Help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks

7. **Environment categorization.** ADB uses a classification system to reflect the significance of a project's potential environmental impacts. A project's category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence. Each proposed project is scrutinized as to its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts. Projects are assigned to one of the following four categories:

- **Category A.** A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
- **Category B.** A proposed project is classified as Category B if its potential adverse environmental impacts are less adverse than those of Category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases, mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
- **Category C.** A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.
- **Category FI.** A proposed project is classified as category FI if it involves an investment of ADB funds to or through a financial intermediary (FI).

8. The IEE Report should include the EMP that specifies the proposed mitigating measures specific to a potential impact, environmental monitoring requirements, institutional arrangements, and budget requirements.

9. ADB also requires public disclosure for Category A and B projects. For Category A, there should be at least two consultations, once during the early stages of the EIA and once when the draft EIA is available prior to ADB loan appraisal. For Category B, the draft IEE report should be available to interested stakeholders before project approval and posted on the ADB's website upon Board approval of the project. Viability and existence of the project are also required.

B. Government's Legal and Institutional Framework

10. Viet Nam's *Law on Environmental Protection (Law No. 55/2014/QH13)* dated 23 June 2014 provides the basis for the country's environmental laws and EIA system. The implementation of this law is guided by implementing guidelines, amendments, regulations on impact assessments, as well as sanctions on violations, incentives, regulations on waste management, and national technical regulations or standards on environmental quality.

11. *Decree 19/2015/ND-CP* dated 14 February 2015 provides guidelines for the implementation of several articles of the law pertaining to the assignment of environmental management responsibilities among ministries, provinces, and people's organizations (POs).

12. *Decree 18/2015/ND-CP* dated 14 February 2015 contains the requirements for Environmental Protection Plan (EPP), Strategic Environmental Assessment (SEA), EIA, and Environmental Protection Scheme (EPS). It also provides a list of project categories requiring an EIA Report (EIAR); 113 project types are listed in Annex II.

13. *Decree No. 80/2014/ND-CP* issued on 6 August 2014 regulates drainage and treatment of wastewater in urban areas, industrial zones, economic zones, processing and export zones, and rural residential areas. It also prescribes the rights and obligations of organizations, individuals, and households with activities related to drainage and treatment of wastewater within Viet Nam's territory.

14. *Decree No. 179/2013/ND-CP* dated 14 November 2013, prescribes sanctions for administrative violations on the domain of environmental protection. *Decree No.59/2007/NĐ-CP* dated 9 April 2007 and *Decree 38/2015/ND-CP* dated 24 April 2015 contain provisions on the management of wastes and scraps, including hazardous wastes.

15. *Circular 27/2015/TT-BTNMT* issued by the Ministry of Natural Resources and the Environment (MONRE) dated 29 May 2015 provides detailed guidance for SEA, EIA, and Environmental Protection Commitment (EPC).

16. The environment standard that the subproject will be meeting and will be monitored against:

- National Technical Regulations on air and noise quality
    - QCVN 05: 2013/BTNMT on ambient air quality
    - QCVN 26: 2010/BTNMT on noise
    - QCVN 27: 2010/BTNMT on vibration
- National Technical Regulations on water quality
    - QCVN 01: 2009/BYT on drinking water quality
    - QCVN 02: 2009/BYT on domestic water quality
    - QCVN 08: 2008/BTNMT on surface water quality
    - QCVN 09: 2008/BTNMT on underground water quality
    - QCVN 14: 2008/BTNMT on domestic wastewater

17. By law, investors and enterprises are required to submit EIAs and EPCs for their projects; government guidelines prescribe the format and content of EIA and EPP reports. Implementation of each of the subcomponents under a project will require compliance with these government-mandated procedures. In this case, the responsibility for compliance rests with the designated CPMU and PPMU.

18. Even though this IEE is written mainly to respond to ADB's requirements for due diligence review of environmental safeguards, it will also serve as reference for the CPMU, during the project's detailed design phase, in preparing compliance documents in the form of an EPC for each subproject for clearance by the provincial Department of Natural Resources and Environment (DONRE) in accordance with Viet Nam's EIA system. Current national standards for construction safeguards (covering environmental protection, workers, and public safety), as well as standards governing water and air quality, will be used as references in assessing impacts and formulating mitigation measures and monitoring means

19. With regard to the institutional framework, environmental management is administered at the national level by MONRE. Aside from MONRE, environment divisions in the various line ministries are tasked with environmental management functions related to the specific sectors.

20. At the provincial level, the relevant management authorities are the Departments of Natural Resources and Environment (DONREs), which carry out their environmental protection activities through their respective environment divisions. DONRE is under the purview of MONRE only in relation to administrative matters and technical guidance. For all other purposes, the DONRE operates under the direct control of the respective provincial governments, through the Provincial People's Committees (PPCs).

C. International Conventions

21. Viet Nam is a party to several international conventions that are relevant to environmental management. None of the conventions has any direct or specific relevance for this IEE as the Project does not encounter any areas of environmental sensitivity covered by the conventions.

Convention Title	Convention date	Viet Nam participation
Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR)	1971	[20 September 1988]
Protocol to Amend the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Paris.	1982	
Convention Concerning the Protection of the World Cultural and Natural Heritage	1972	[19 October 1987]
Convention on International Trade in Endangered Species Wild Fauna and Flora	1973	[20 January 1994]
UN Environmental Modification Convention (ENMOD)	1977	[26 August 1980]
FAO International Code of Conduct on the Distribution and Use of Pesticides		
Montreal Protocol on Substances that Deplete the Ozone Layer	1987	[26 January 1994]
London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London.	1990	
Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen.	1992	
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1995	[13 March 1995]
United Nations Framework Convention on Climate Change	1992	[16 November 1994]
Convention on Biological Diversity	1992	[16 November 1994]

III. DESCRIPTION OF THE PROJECT

A. Thanh Son-Phuoc Nhon (TSPN) Subproject

1. Subproject Location

22. The TSPN subproject is located in the four districts of Ninh Hai, Ninh Son, Thuan Bac, and Bac Ai of Ninh Thuan Province. The subproject will develop 1,800 ha with a water allocation of 1.8 m^3/s coming from the Song Cai River via the Tan My irrigation pipe system.[3]

2. Technical Specifications

23. The subproject will comprise buried HDPE or PVC pipelines off-taking from the main steel pipeline provided by the Tan My irrigation project. The pipelines will have 60-mm diameter hydrants at 50-100 m intervals commanding areas on either side of the pipeline. Hydrant flow will be 5 l/s to ensure that each farmer will have access to water within 500 m.

24. To meet the requirement, the pipeline density in the proposed layouts varies from 12-23 m/ha. The required pipe diameter will vary from about 700 mm for the upper part of the largest system to about 200 mm, with a total pipe length of 35.85 km.

25. The pipelines are designed to be buried underground at a minimum depth of 0.7-1.2 m based on the pipeline diameter. The pipeline will be fixed and protected by a sand layer of 20 cm and a covering on its top with a good soil layer selected from the excavation. The layout of the watering areas of the TSPN subproject is shown in **Figure 1**.

B. Nhon Hai–Thanh Hai Subproject

1. Subproject Location

26. The NHTH subproject is located in the three communes of Tri Hai, Nhon Hai, and Thanh Hai of Ninh Hai District situated along the northeastern coast of Ninh Thuan. The subproject will develop 1,000 ha of land for agricultural utilization with a water allocation of 0.87 m^3/s from the Tan My pipeline.

2. Technical Specifications

27. A 9.5-km supply pipeline with a diameter of 560 mm will run from the tail (Km 31.1) of the Tan My pipeline to the subproject boundary. Within the command area, irrigation design will conform with standard norms now adopted for all subprojects, specifically:

- Each farmer in the command area to have access to water within 500 m (max.).
- Outlets to supply about 5 l/s from 90-mm pipe hydrants at a pressure of at least 1 m. Each outlet, with a flexibility factor of about 2, will irrigate about 5 ha, i.e., about 3-8 smallholder farms. Each farm is to have a dedicated connection, i.e., outlet hydrant manifolds will allow each farmer to have his own pipe connection.
- Farmers may choose to either connect to a hydrant manifold or to take water directly from the canal, or they may opt out altogether.
- Design duty for pipe system is to be about 0.56 l/s/ha (requirement for the proposed mix of crops) x 2 (for operational flexibility and losses) x 0.78 (adoption rate) = 0.87 liter per second per hectare (l/s/ha).

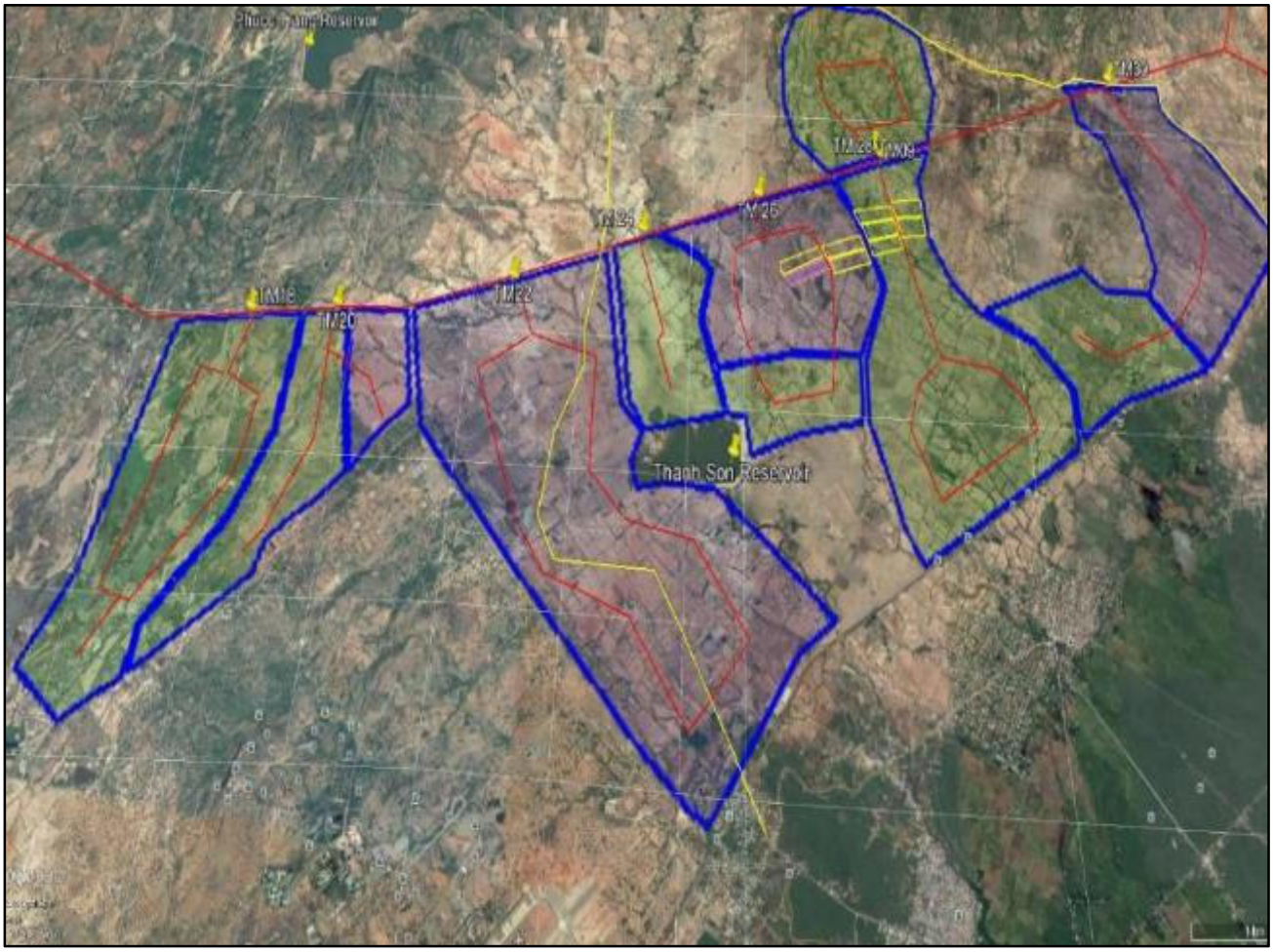
[3] The government has constructed the first 31 km of the Tan My pipeline and expects to complete the rest in 2018.

28. In the narrow upper part of the command area, a single pipeline with hydrants to which farmers can connect is proposed, with a total length 1.7 km. The lower part of the command area is 1.0-1.7 km wide, and a ring pipeline will ensure that all farms are within 500 m of a hydrant with a total length of 8.9 km. A branch pipe 0.8-km long and with a diameter of 560 mm leading from the ring main will supply water to the Ong Kinh Reservoir during non-peak irrigation. The pipe diameters vary from about 700 mm at the head to 450 mm in the upper part of the ring main and about 300 mm in the lower part of the ring main. The total length of pipeline within the command area is about 14.8 km, giving a pipeline density of 14.8 meter per hectare (m/ha).

29. Rigid PVC or black high-density polyethylene (HDPE) will be adopted for pipe diameters 500 mm and smaller. For larger pipes, either HDPE or glass fiber reinforced plastic (GRP) will be used.

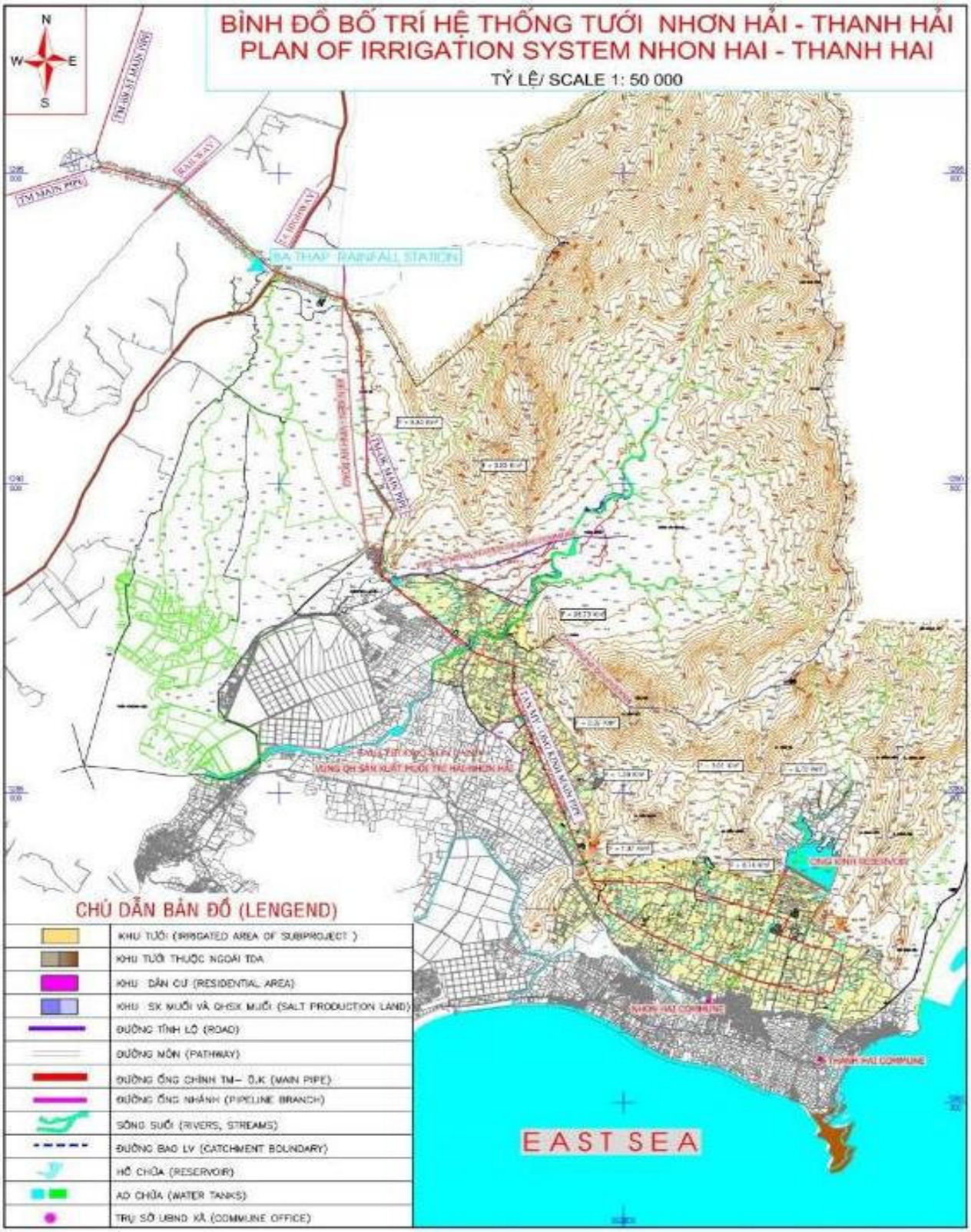
30. The proposed layout for the Nhon Hai-Thanh Hai subproject is in **Figure 2**.

Figure 1: Layout for Thanh Son–Phuoc Nhon Subproject



Note: TM: Tan My pipeline

Figure 2: Proposed Layout for the Nhon Hai-Thanh Hai Subproject



IV. DESCRIPTION OF THE ENVIRONMENT

A. Physical Environment

1. Topography

31. The TSPN subproject is located in the four districts of Ninh Hai, Ninh Son, Thuan Bac, and Bac Ai of Ninh Thuan Province. Land slopes in the subproject area are mostly quite flat (0-3%) but broken by gullies and streams that flow north to south through the command area, and some small, but steep hills. Some undulating areas, bisected by gullies and near hills, have moderate slopes (4-8%). Overall, land slopes pose no constraints to irrigated agriculture.

32. The NHTH subproject is located entirely within Ninh Hai District situated along the northeastern coast of Ninh Thuan, with most land slope being quite flat without posing any constraints to irrigated agriculture.

2. Hydrology

33. The Cai River is the major river system in both subprojects in Ninh Thuan Province. The river originates from the eastern side of the Gia Rich mountain and flows north to south, draining into the East Sea at Phan Rang Bay. The total length of the Cai River is estimated at 120 km, with a catchment area of approximately 3,043 square kilometers (km^2).

34. The Tan My irrigation system (TMIS) project funded by MARD is developing the Cai Reservoir with a planned storage of 10.3 million cubic meters (mcm). It is scheduled for completion by 2020. The Cai Reservoir is expected to release an average of about 15 m^3/s and 11 m^3/s for the whole year during the dry season. The design capacity of the Tan My main supply pipeline, at the head, is 6.5 m^3/s, with flows provisionally allocated as follows:

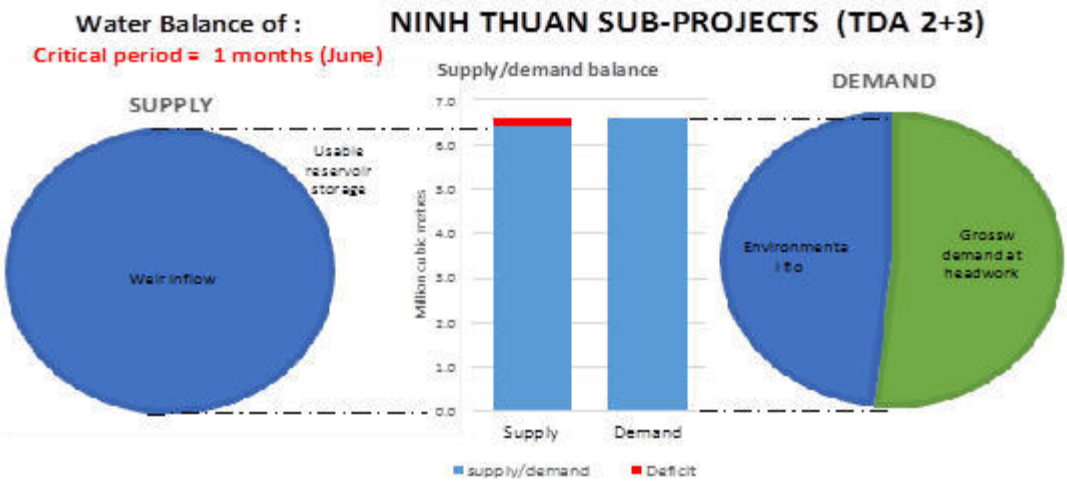
- WEIDAP subprojects: 2.7 m^3/s;
- Supplementary supply to existing reservoir schemes, Cho Mo, Ba Rau, and Tran River: 1.5 m^3/s; and
- Power station, urban, and industrial use supply: at least 1 m^3/s.

3. Subproject Water Balance

35. As the capacity of the planned TMIS reservoir was not included in the water balance calculations, the water availability will depend on reliable, run-of-river flows in the Cai River at the Tan My weir after deducting any environmental flow allowed to pass the weir to the river downstream. The subprojects have command areas consisting of 1,800 ha for the TSPN subproject, dominated by grapes and Vietnamese apples, and 1,000 ha for the NHTH subproject with main crops of onion, garlic, chili, legumes, and other vegetables. The water balance calculations for the subprojects, done by the Institute of Water Resources Planning (IWRP), indicated that until the Cai Reservoir completed, the Cai River at Tan My will not be able to support the proposed cropping pattern in the two subproject areas with the target reliability of 85%. Details are shown in the following table and figure.

Water Balance: in million cubic metres

	Supply		Demand
Usable reservoir storage	0	Gross demand at headwork	3.406
Reservoir inflow	6.389	Environmental flow	3.188
Total	6.389		6.594
Balance	-0.205	(Deficit)	



36. The flora in the Song Cai river ecosystem upstream and downstream of Tan My weir, where both subprojects will attract water, consists mainly of mosses and water hyacinth. The aquatic fauna consists of small river fish, shrimp and crab. In general, aqua-ecosystem is in poor condition due to limited water and pollution by agricultural runoff. These are no endemic or otherwise significant species in the river that need to be protected.

The typical views of Song Cai River in upstream of Tan My weir.

4. Surface Resources

a. Surface Water Quality

37. Four samples of surface water along the Cai River were taken for analysis by Southern Environment Experiment Analysis Co., Ltd. in July 2016 for the purpose of setting up the water quality baseline data for environmental monitoring during the construction and operational phases of the subprojects. The results showed that the surface water quality of Cai River is polluted with organic wastes as chemical oxygen demand (COD) and dissolved oxygen (DO) exceed the allowable limits for these two parameters, as required in *Quy chuẩn kỹ thuật* (National Technical Regulations) (*QCVN 08/2015/BTNMT)*(**Tables 1 and 2**). However, the water is assessed to be suitable for irrigation purposes. If it will be used for drinking water, proper treatment must be carried out.

Table 1: Results of Analysis of Surface Water, TSPN Subproject

Parameter	Unit	M1	M2	M3	M4	M5	QCVN 08 - MT:2015/ BTNMT CỘT B1
pH	-	7.1	7.0	7.2	6.9	7.2	5.5 - 9
BOD5	mg/L	10.9	13.2	10.2	14	13.3	15
COD	mg/L	30.5	25.7	21.4	20.6	24.7	30
DO	mg/L	2.3	2.5	4.3	3.6	4.2	≥4
TSS	mg/L	56.5	64.7	46.4	51.4	47.6	50
TDS	mg/L	42.3	50.6	28.6	32.1	34.4	-
Turbidity	NTU	18.7	19.8	8.4	11.4	14.4	-

Parameter	Unit	M1	M2	M3	M4	M5	QCVN 08 - MT:2015/ BTNMT CỘT B1
NH4+	mg/L	0.51	0.35	0.02	0.05	0.11	0.9
NO3-	mg/L	8.7	6.2	0.8	0.25	0.41	10
NO2-	mg/L	0.02	0.02	0.01	0.01	KPH	0.05
SO42-	mg/L	76.7	53.5	48.9	68.2	87.4	-
Pb	mg/L	NA	NA	NA	NA	0.01	0.05
Cl-	mg/L	82.5	79.4	101.1	87.6	50.5	350
Fe	mg/L	0.05	0.07	0.02	0.52	0.41	1.5
Zn	mg/L	0.12	0.05	0.12	0.05	0.03	1.5
Cu	mg/L	0.01	0.02	0.03	0.12	0.05	0.5
Mn	mg/L	0.51	0.32	0.41	0.41	0.12	0.5
Coliform	MNP/100ml	2.3×10^3	2.3×10^3	2.1×10^3	1.5×10^3	1.5×10^3	7,500

Table 2: Results of Analysis of Surface Water, NHTH Subproject

Parameter	Unit	M1	M2	M3	QCVN 08 -MT:2015/ BTNMT CỘT B1
pH	-	6.5	6.8	6.7	5.5 - 9
BOD5	mg/L	7.2	7	7	15
COD	mg/L	38	41	36	30
DO	mg/L	8.2	8	7.8	≥4
TSS	mg/L	63	55	75	50
TDS	mg/L	75	56.6	68.6	-
Độđục	NTU	18.7	19.8	8.4	-
NH_4^+	mg/L	0.31	0.55	0.42	0.9
NO_3^-	mg/L	6.7	8.2	7.8	10
NO_2^-	mg/L	0.02	0.02	0.01	0.05
SO_4^{2-}	mg/L	74.7	63.5	58.7	-
Pb	mg/L	NA	NA	NA	0.05
Cl^-	mg/L	92.5	79.4	91.3	350
Fe	mg/L	0.08	0.1	0.09	1.5
Zn	mg/L	0.02	0.15	0.22	1.5
Cu	mg/L	0.03	0.01	0.03	0.5
Mn	mg/L	0.41	0.52	0.31	0.5
Coliform	MNP/ 100ml	$2.3x10^3$	$2.3x\ 10^3$	$2,1x\ 10^3$	7,500

b. Groundwater

38. In both subproject areas, the groundwater level is very deep and, at times, inadequate to sustain agricultural production. In the NHTH subproject area, saltwater intrusion and agrochemical contamination of the aquifer have been major concerns, most especially during the drought years as abstraction intensified due to the lack of surface water sources.

39. **Tables 3** and **4** present the results of the analysis of groundwater samples taken in July 2016[4] during the preparation of the environmental assessment of the TSPN subproject. The

[4] Report of subprojects on irrigation system for advanced agriculture and industry. July 2016

results of the analysis showed that all the parameters are within allowable limits in *QCVN 09:2015/BTNMT.*

Table 3: Results of Groundwater Analysis, TSPN Subproject

Parameter	Unit	NN1	NN2	NN3	NN4	NN5	QCVN 09/2015/BTNMT
pH	-	7.4	7.2	7.5	7.4	7.1	5.5 – 8.5
Hardness	mg/L	122	136	145	126	130	500
Cl-	mg/L	78.6	102	108	81.2	98.6	250
TDS	mg/L	20.5	15.8	16.4	13.8	10.4	1,500
COD	mg/L	1.6	1.5	2.8	0.8	1.3	-
NH4+	mg/L	NA	0.01	0.02	0.01	0.01	1
N_NO3-	mg/L	2.6	3.5	1.9	3.2	4.6	15
N_NO2-	mg/L	0.03	0.05	KPH	0.01	0.02	1
SO42-	mg/L	58.5	83.5	120	90.9	76.3	400
Fe	mg/L	2.21	1.88	0.85	1.05	1.72	5
Zn	mg/L	0.35	0.15	0.56	0.08	0.45	3.0
Cu	mg/L	0.05	0.02	0.05	0.15	0.06	1.0
Mn	mg/L	0.02	0.02	0.01	0.03	0.12	0.5
Arsenic	mg/L	NA	NA	NA	NA	NA	0.05
Coliform	MNP/100ml	<3	<3	<3	<3	<3	3

Table 4: Results of Groundwater Analysis, NHTH Subproject

Parameter	Unit	NN1	NN2	NN3	NN4	NN5	QCVN 09-MT:2015/BTNMT
pH	-	7.4	7.4	7.5	7.1	7.2	5.5 – 8.5
Hardness	mg/L	122	126	145	130	136	500
Cl-	mg/L	78.6	81.2	108	102	98.6	250
TDS	mg/L	20.5	13.8	16.4	15.8	10.4	1,500
COD	mg/L	1.6	0.8	2.8	1.5	1.3	-
NH4+	mg/L	0.01	0.01	0.01	0.01	0.01	1
N_NO3-	mg/L	1.9	3.5	2.6	3.2	4.6	15
N_NO2-	mg/L	0.02	0.05	0.03	0.01	0.02	1
SO42-	mg/L	120	83.5	58.5	90.9	76.3	400
Fe	mg/L	0.85	1.88	2.21	1.05	1.72	5
Zn	mg/L	0.15	0.45	0.08	0.56	0.35	3.0
Cu	mg/L	0.02	0.06	0.15	0.05	0.05	1.0
Mn	mg/L	0.03	0.12	0.02	0.01	0.02	0.5
Arsenic	mg/L	NA	NA	NA	NA	NA	0.05
Coliform	MNP/ 100ml	<3	<3	<3	<3	<3	3

5. Air Quality and Noise

40. Air quality in both the subproject areas is generally good (**Tables 5 and 6**). There are no industries producing discharges/emissions, which result in atmospheric pollution and pollution from vehicular exhaust emissions are not significant given the low levels of traffic and the absence of any traffic congestion. The only detrimental effect on air quality is the dust arising from the passage of vehicles over unsealed roads when the roads are dry. This is an intermittent problem with a minor effect over a limited area of 5-10 m on either side of the road. The locations of the subproject components are relatively far from noise generating activities. There are no industries,

as mentioned in the previous section, so ambient noise levels can be considered very good. The proposed sites of the subproject components are a good distance from the nearest sensitive receptors. The results of the analysis of ambient air quality and ambient noise in both subprojects are in **Appendix 1**.

Table 5: Ambient Air Quality of TSPN Subproject

Sampling Locations	TSP	CO	NO2	SO2	NH3	H2S	Noise
Unit	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	dBA
K1	0.25	2.4	0.06	0.04	0.01	0.01	56-62.3
K2	0.34	1.05	0.05	0.12	NA	NA	50-63
K3	0.24	0.65	0.04	0.08	NA	0.01	60-65
K4	0.32	0.62	0.1	0.06	NA	NA	55-65
K5	0.32	1.8	0.05	0.10	NA	NA	56-62
K6	0.31	0.8	0.02	0.02	NA	0.01	53-61
K7	0.22	1.8	0.03	0.03	NA	NA	50-58
K8	0.27	2.1	0.08	0.11	NA	NA	52-61
K9	0.33	0.8	0.05	0.12	NA	NA	54-67
QCVN 05/2013/BTNMT	0.3	30	0.2	0.35	0.2**	0.042**	70*

Notes: *QCVN 26/2010/BTNMT – National standards for ambient noise.
**QCVN 06/2009 – National standards for several toxic substances in ambient air.

Table 6: Ambient Air Quality in NHTH Subproject

Sampling Locations	TSP	CO	NO2	SO2	NH3	H2S	Noise
Unit	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	dBA
K1	0.25	3.9	0.06	0.04	NA	NA	56
K2	0.20	1.3	0.10	0.08	NA	NA	55
K3	0.27	4.0	0.02	0.02	NA	NA	57
K4	0.23	3.4	0.05	0.12	NA	NA	50
K5	0.29	3.5	0.04	0.06	NA	NA	52
K6	0.30	2.5	0.05	0.02	NA	0.01	58
QCVN 05/2013/BTNMT	0.3	30	0.2	0.35	0.2**	0.042**	70*

Notes: *QCVN 26/2010/BTNMT – National standards for ambient noise.
**QCVN 06/2009 – National standards for several toxic substances in ambient air.

B. Socioeconomic Features

1. Population and Ethnic Minorities

41. The TSPN subproject is located in the five communes of Xuan Hai, Bac Phong, Nhon Son, Phuoc Trung, and Loi Hai in the four districts of Ninh Hai, Ninh Son, Thuan Bac, and Bac Ai, respectively, with a population of 235,059 persons, of whom 88% reside in rural areas, accounting for 39% of the total population of the province. The ethnic minority (EM) population in the subproject districts accounts for 53% of the total EM population of the province. Bac Ai district has the largest EM population, being home to 85.1% mostly Raglai people. Cham and Raglai are the two largest groups, comprising 23.5% and 6% of the population in four subproject districts, respectively. The remaining 1.7% consists of Hoa (Chinese) Chu Ru, Tay, and Nung. Raglai and Cham are considered as aboriginals of Ninh Thuan Province (**Table 7**).

Table 7: Subproject Demographics at District Level

Indicators	Province	Subproject Districts					Share of Province (%)
		Ninh Hai	Ninh Son	Thuan Bac	Bac Ai	Total	
Average population	595,850	91,937	75,208	41,229	26,685	235,059	39
Ethnic minorities	141,812	8,090	16,997	28,036	22,549	75,672	53

42. The NHTH subproject is situated entirely in Ninh Hai district in the three communes of Xuan Hai, Tri Hai, and Thanh Hai with a combined population of 35,305 from 8,650 households (2015). Most of the inhabitants are of Kinh origin. The EMs in the subproject area reside mainly in Phuoc Trung, Loi Hai, and Xuan Hai, with percentages of 85.1%, 67%, and 50%, of the total population, respectively (**Table 8**).

Table 8: Subproject Demographics at Commune Level

Subproject	Thanh Son – Phuoc Nhon				Nhon Hai – Thanh Hai		
Districts	Bac Ai	Ninh Son	Thuan Bac		Ninh Hai		
Communes	Phước Trung	Nhơn Sơn	Bắc Phong	Lợi Hải	Xuan Hai	Nhon Hai	Tri Hai
Population	2,512	15,228	5,953	2,727	16,729	13,316	10,668
EMs	2,411	363	2	1,908	8,364	0	0

C. Current Agricutural Land Use in the Command Area

1. Thanh Son – Phuoc Nhon Subproject

43. Although agriculture is practiced on only 21% of the TSPN subproject area, it plays an important role in the livelihood of people and provides their main source of income. In contrast, forestry land comprises about 64% of the land area. The main annual crops in the participating districts include paddy, maize, cassava, and vegetables and other subsistence crops. The main cash crops are perennial tree crops, including cashew and fruits (grapes, Vietnamese apple, and mangoes). However, agricultural land in the TSPN system watering area is not being cropped at present, and is covered with patches of grass, thorny shrubs, and cacti and is mostly used for grazing of cattle and small ruminants (goats and sheep).


Paddy fields in the targeted watering area are abandoned because of the lack of fresh water and are instead used for cattle grazing.


44. Unreliable water supplies led the farmers to abandon agriculture, but they still mostly retain tenure. With the project, many are expected to return to this abandoned area and continue farming. One household in Village 3, Xuan Hai Commune, Ninh Hai District has been struggling with the difficulty of growing coconuts.


2. Nhon Hai-Thanh Hai Subproject

45. Agricultural land accounts for 12.6%, 40.0%, and 42.5% of the total land area of Tri Hai, Nhon Hai, and Thanh Hai communes, but agriculture is still the dominant sector in the area, providing 85-90% of the output in the three communes. The main crops include paddy and vegetables for subsistence, while cash crops include garlic, spring onion, and Vietnamese apple.

D. Employment, Income, and Living Standard

46. The economic sectors in the subproject districts include agriculture, industry and construction, and trading services, with agriculture accounting for around 50% of the total output. Bac Ai District is the poorest district in Ninh Thuan Province, with a high poverty rate of 46.12% (2015) and a per capita income of 13.9 million Vietnamese Dong (VND) per year. In comparison, poverty rates in the other districts fluctuate from 6.73-11.5% and per capita income, from VND17-25 million per year (**Table 9**).

Table 9: Poverty and Income of Subproject Districts

No.	Socioeconomic Information	Subproject districts			
		Bac Ai	Thuan Bac	Ninh Hai	Ninh Son
1	Poverty rate in 2015 (%)	46.12%	10.13%	6.73%.	11.5%
2	Average income/capita/year (VND million)	13.9	16.7	25.5	183

Source: FS Report of Thanh Son–Phuoc Nhon Subproject, 2017.

47. The poverty rates of the subproject communes ranged from 6.5-51.1%, with Phuoc Trung Commune, located in a mountainous area and home to mostly Raglai people, the poorest commune (**Table 10**).

Table 10: Poverty Rates of Subproject Communes

Subproject	Thanh Son – Phuoc Nhon					Nhon Hai – Thanh Hai		
Districts	BacAi	Ninh Son	Thuan Bac		Ninh Hai			
Communes	Phước Trung	Nhơn Sơn	Bắc Phong	Lợi Hải	Xuan Hai	Nhon Hai	Tri Hai	Thanh Hai
Poverty rate (%), 2016	51.08	9.34	13.46	33.43	6.54	8.35	7.8	7.17

E. Environmental Issues

48. There are no biodiversity conservation or protected areas within the two subproject areas. The nearest protected areas from the TSPN and NHTH subproject areas are the Nui Chua National Park and Phuoc Binh national parks located 16 km from the subproject areas. The implementation of the subprojects will not have any impact on the said conservation areas.

49. There are also no sites of archaeological significance within and around the two subproject areas. The project components will not affect any historical and archaeological sites, such as temples and burial sites.

V. ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

50. This section discusses potentially positive and negative environmental impacts and identifies mitigation measures to minimize the impacts in the design, construction, and operation phases of the two subprojects. The EMPs of the subprojects were developed based on the identified impacts.

51. At the proposed sites, temporary disruption and nuisance impacts may be experienced, mainly during the construction period. The potential environmental impacts were identified based on the project activities that may occur in each component and evaluated based on the environmental and social baseline situation in the subproject area. The identification of environmental impacts was based on available technical information related to subproject component design and operation, field visits, information from stakeholders, as well as feasibility study and previous IEE reports of the proposed subproject.

52. The potential environmental impacts, as well as the mitigation measures during the pre-construction, construction, and operational phases were assessed, as described below. The assessment criteria used were in line with ADB's SPS (2009) and Government of Viet Nam standards based on the *Environmental Protection Law of 2014*. Where there are conflicts between Government of Viet Nam standards/guidelines and the ADB SPS, the latter will prevail as the policy for the

subproject implementation. The EMP also is also presented below, including mitigation measures and monitoring plan for the implementation of the subproject.

A. Potential Positive Impacts of Both Subprojects

53. The proposed irrigation improvement projects for Ninh Thuan Province are expected to produce beneficial impacts. The principal economic benefits are better returns from planting HVCs and more cost- effective utilization of irrigation water by the farmers via the introduction of high-technology irrigation systems and improved access to reliable irrigation water supply. Moreover, the implementation of the proposed irrigation project will reduce the dependence of farmers on groundwater sources for their water requirement.

54. In general, the provision of sustainable and sufficient irrigation water supply is expected to result in improved economic conditions and, consequently, better quality of life for the communities. The immediate impact will be sustainable and reliable irrigation water supply that will translate into higher service levels, particularly in terms of coverage of agricultural areas. There will be longer supply windows that would eventually lead to 24-hour supply in the service areas. Water pressure will likewise improve. Farmers will also need less time and effort in securing water for their crops.

55. There will also be employment or livelihood benefits for the local people. Contractors will use local labor for simple works, creating jobs, raising income, and, thus, contribute to alleviating poverty in the local communities in the short term. Local people in the residential areas of the subproject communes will benefit from subproject construction through their participation in the civil works. In order to support creating jobs for locals, there should be coordination between the contractor and commune people's committees (CPCs) of the subproject communes, as well as in nearby communes, in recruiting local laborers (contractors often prefer to engage their own trained workforces rather than training unskilled laborers). The duration of the impact is also short, only during the 24month construction period.

1. Thanh Son-Phuoc Nhon Subproject

a. Pre-construction phase

i. Impact on Land Acquisition and Community Assets

56. **Impact.** There will be limited land acquisition required for the development of the requisite project component facilities. Likewise, it is anticipated that there will be minimal acquisition required for temporary use of land or loss or damage to assets during pipe laying. Specifically, approximately 27 ha land of perennial and annual crop land will be permanently affected by the subproject, but no household has to relocate.[5]

57. **Mitigation measure.** An updated Resettlement Action Plan (RAP) for the subproject has been prepared separately to ensure that any loss of land, trees, or damage to property will be subject to compensation in accordance with the WEIDAP Resettlement Framework (RF).

b. Environmental Impacts during Construction

i. Disturbance to Cultivation Activities

58. **Impact.** Local cultivation activities in the command area proposed to be irrigated by the pumped line system may be disturbed due to the construction of the subproject facilities if

[5] Resettlement Plan Report, 2017.

stockpiles and excavated soil are improperly managed by contractors and if the installation of the pipeline system crossing the local access road is not planned properly.

59. **Mitigation measure.** Contractors will: (i) cooperate with local people and authorities to set up the pipe installation plan through the farmlands with specific work methods to prevent disturbance of cultivation activities; (ii) not be allowed to temporarily stockpile and gather construction materials in ways that may prevent farmers from their cultivation activities; (iii) prepare a temporary access road for farmers before installing the pipeline across their access roads; and (iv) immediately rehabilitate the excavated areas and any damaged road and path sections to the access roads.

ii. Waste Management

- **Excavated Soil**

60. **Impact.** Excavated soil that is left over after filling back the pipeline system will affect the land and cultivation of villagers. It is also a source of dust in the dry season and could be easily washed away by runoff settle as sediment in lower areas, ponds, or canals nearby.

61. **Mitigation measure.** Any surplus material will be disposed properly and/or given for free to interested villagers for use as backfill materials in coordination with the village authority. There is no anticipated need for spoil disposal sites.

- **Construction Waste**

62. **Impact.** The inert waste that will be generated during the civil works will consist mainly of scrap wood and metal, cement bags, aggregates, and plastics, which will affect land in the construction sites and pose physical danger to farmers.

63. **Mitigation measure.** These wastes will be collected and classified for re-use or recycling or otherwise treated in Nam Thanh Solid Waste Treatment Factory in , Kien Kien Village, Loi Hai Commune, Thuan Bac District to prevent danger to people.

- **Domestic Waste**

64. Domestic waste is not anticipated to constittute a significant volume as only small temporary camps will be established at the sites of the facilities. There will be no camps at the worksites for the transmission and distribution pipelines. It is projected that the temporary camps will generate an estimated 0.4-0.5 kg/person/day and would consist mainly of plastic and glass bottles, paper, cardboard, food wastes, and packaging wastes.

65. **Mitigation measure.** The contractor will provide a dustbin for worker camps to ensure that all domestic wastes are collected. The contractor will sign contract with Nam Thanh Production, Trade and Service Ltd., Company for transfering and treating waste to/at Nam Thanh Soilid Waste Treatment Factory in Kien Kien Village, Loi Hai Commune, Thuan Bac District .

- **Hazardous Waste**

66. Hazardous wastes, such as containers of paint and solvents and spent batteries, are likely to be generated during the works. Although the volume is anticipated to be small, this type of waste is highly detrimental to the environment and public health.

67. **Mitigation measure.** Secure and controlled storage of all hazardous materials, including fuels, will be ensured by following *Circular 36/2015/BTNMT*. By then, hazardous materials will be

transferred and treated to/at Nam Thanh Soilid Waste Treatment Factory by Nam Thanh Production, Trade and Service Ltd., Company

iii. Dust and Gas Emissions

68. **Impact.** Noise and dust are likely to be generated mainly from: (i) earthworks concentrated within a 50-m radius of the work site; (ii) emissions from the operation of construction equipment and machinery; and (iii) fugitive emissions from vehicles plying the area and during the transport of construction materials. Most of the emissions will be in the form of coarse particulate matter and will settle down in the vicinity close to the work sites, with small quantities in a large space. Except for installing the 430-m pressure pipeline from the pumping station to the elevated water tank to be located in Village 3 of Tan Ha commune, most of the working sites are far from residential areas. The impacts are assessed to be minor, local, short-term, direct, and reversible.

69. **Mitigation measures.** The following measures will be implemented at the worksites:

- Excavated material and stockpiles will be kept moist.
- Watering activities along the community road will be conducted during cutting of concrete, excavation activities, and leveling after completion of pipe installation to suppress dust at all times and avoid complaints by villagers.
- Transport vehicles will be required to install tarpaulin covers or other suitable material to prevent spillage of the hauled materials.
- Construction equipment and vehicles will, at all times, be well maintained and in good working condition to reduce fugitive emissions.
- Speed limits will be imposed in construction sites to minimize dust emission.

iv. Noise

70. **Impact.** Construction activities may cause noise and vibration impacts for a short duration. The operation of equipment for the installation of the distribution network may cause a nuisance to adjacent residential houses living along 430 m of the pressure pipe located in Village 3 of Tan Ha Commune.

71. **Mitigation measures.** To mitigate the adverse impacts identified, contractors will be required to:

- Limit work hours at the sites to 0700H–1800H.
- Install stationary equipment like diesel generators as far as practicable from sensitive receptors. Buffers will also be established as further mitigation.

v. Community Health and Safety

72. **Impact.** During the works, the community may be exposed to health and safety risks from increased vehicular movements in the area, open excavations, the operation of heavy equipment, and conflicts between locals and migrant workers.

73. **Mitigation measures.** Contractors will be required to:

- Install barricades/barriers and sturdy plate covers in open excavations during non-working time;
- Install warning signs in the area and fence the area to prevent any unauthorized entry of people to the construction sites;
- Provide priority hiring of qualified construction workers from the villages and consult with the local authorities to avoid conflicts if migrant workers are brought to the site.

vi. Occupational Health and Safety

74. **Impact.** The implementation of the works may result in hazards to the safety of workers, such as tripping, slippery surfaces, carrying heavy loads, and during operation of machines and equipment and electricity.

75. Mitigation measures**.** The contractor will be required to

- assess occupational health and safety as a part of site specific EMP prepared before construction commenced;
- provide specific OHS training/briefing to all workers
- provide appropriate Personal Protective Equipment (PPE) to all workers,
- provide first- aid kits at the construction work readily accessible by workers;
- ensure that vehicle and equipment operators are properly trained and licensed

vii. Temporary Traffic Disturbances and Community Road Damage

76. **Impact.** The transport of materials to sites of upgrading of existing canals, pumping station, and pipe laying for the distribution network will use the community roads. Thus, damage of the community road and traffic disturbances are possible adverse impacts of subproject construction due to the increase in traffic density in the sites. However, the impact is assessed to be small, local, short, and easily mitigated.

77. **Mitigation measures.** Contractors will be required to:

- Inform the local people and authorities about the duration of work at each specific site.
- Collaborate with the local traffic agency in installing signboards to instruct local travelers to reduce speeds or advise them on traffic rerouting.
- Avoid stockpiling and storing construction materials and parking on community roads.
- Clean worksites and fill up all holes on sites after ending the day's work to ensure that local people can transport without any potential of an accident.
- Bear all responsibility for rehabilitating any damage to community roads due to subproject construction.

c. Environmental Impacts during Operation

78. The potential long-term or permanent impacts of project development are most important and generally determine the level of impact assessment that an irrigation project requires. The potential long-term impacts include: (i) occupational health and safety; (ii) pipe leakages; and (iii) community health and safety.

i. Leaks in Pipelines

79. There is a potential risk of high water pressure that will cause bursting of pipes, although this is a very low-risk occurrence. As mitigation and to minimize the risk of bursting pipes from high water pressure in the mains, the following measures will be put in place: (i) the use of durable standard pipes for the lines; (ii) careful construction supervision by the Contractor to ensure that pipe laying and joining are done according to the highest standards; and (iii) regular inspection of the network and prompt isolation and repair when leaks occur.

ii. Occupational Health and Safety

80. The operation of the TSPN Reservoir will require operating equipment, which could pose risks to the safety of workers and staff. Proper guidance and adherence to occupational health and safety protocols need to be established in the said facilities in accordance with the World Bank's *EHS Guidelines* (http://www.ifc.org/ehsguidelines) as a minimum standard.

iii. Community Health and Safety

81. The facilities that will be constructed will be properly fenced off and secured to restrict access and intrusion of unauthorized personnel. Watchmen/security personnel will be hired to secure the facilities on a 24-hour basis. This would minimize the safety risks to the community.

2. Nhon Hai-Thanh Hai Subproject

a. Pre-Construction Phase

i. Impact on Land Acquisition and Community Assets

82. **Impact.** Limited land acquisition will be required for the development of the requisite project component facilities. Likewise, it is anticipated that there will be minimal acquisition required for the temporary use of land or loss or damage to assets during pipe laying. Some 12.5 ha of onion and rice lands will be permanently acquired for the subproject, but no household has to relocate.[6]

83. **Mitigation.** An updated RAP for the subproject has been prepared separately to ensure that any loss of land or trees or damage to property will be subject to compensation in accordance with the WEIDAP RF.

b. Environmental Impacts during Construction

i. Disturbance to Cultivation Activities

84. **Impact.** Local cultivation activities, including harvest of cashew and pepper, in the command area proposed to be irrigated by the pumped pipeline system may be disturbed due during the construction phase if stockpiles and excavated soil are improperly managed by contractors and the installation of the pipeline system across the local access road is unplanned.

85. **Mitigation measures.** Contractors will be required to:

- Cooperate with local people and authorities in planning the arrangements and timing of the pipe installation to avoid disturbances on cultivation activities;
- Avoid temporarily stockpiling and storage of construction materials in a manner and location that may prevent farmers from their cultivation activities;
- Prepare a temporary access road for farmers before installing the pipeline across their access roads;
- Immediately rehabilitate the excavated areas and any damaged road and path sections to the access roads; and
- Select the best working method for installing pipes at sites based on real farming status to avoid any damage to trees standing nearby and to compensate farmers whose trees are damaged or died due to subproject construction.

[6] RP of Nhon Hai–Thanh Hai subproject.

ii. Waste Management

- **Excavated Soil**

86. **Impact.** Excavated soil and residues after backfilling the pipeline system will affect the land and cultivation of villagers. They are also sources of dust generation in the dry season and could easily be washed away in runoff to nearby ponds and canals.

87. **Mitigation measures.** Any surplus material will be disposed properly and given for free to interested villagers as backfill materials in coordination with the village authority.

- **Construction Waste**

88. **Impact.** The inert waste that will be generated during the works will consist mainly of scrap wood and metal, cement bags, aggregates, and plastics, which will affect the land in the construction sites and pose a physical danger to farmers.

89. **Mitigation measure.** These wastes will be collected and classified for re-use or recycling and otherwise treated in Nam Thanh Solid Waste Treatment Factory in , Kien Kien Village, Loi Hai Commune, Thuan Bac District disposed in regulated landfills to ensure that they pose no danger to people.

- **Domestic Waste**

90. Domestic waste is not anticipated to constittute a significant volume as only small temporary camps will be established at the sites of the facilities. There will be no camps at the worksites for the transmission and distribution pipelines. It is projected that the temporary camps will generate an estimated 0.4-0.5 kg/person/day and would consist mainly of plastic and glass bottles, paper, cardboard, food wastes, and packaging wastes.

91. Mitigation measure. The contractor will provide a dustbin for worker camps to ensure that all domestic wastes are collected. The contractor will sign contract with Nam Thanh Production, Trade and Service Ltd., Company for transfering and treating waste to/at Nam Thanh Soilid Waste Treatment Factory in Kien Kien Village, Loi Hai Commune, Thuan Bac District.

- **Hazardous Wastes**

92. Hazardous wastes, such as containers of paint and solvents and spent batteries, are likely to be generated during the works. Although the volume is anticipated to be small, this type of waste is highly detrimental to the environment and public health.

93. **Mitigation measure.** Secure and controlled storage of all hazardous materials, including fuels, will be ensured by following *Circular 36/2015/BTNMT*. By then, hazardous materials will be transferred and treated to/at Nam Thanh Soilid Waste Treatment Factory by Nam Thanh Production, Trade and Service Ltd., Company

iii. Dust and Gas Emissions

94. **Impact.** Noise and dust are likely to be generated mainly from: (i) earthworks concentrated within a 50-m radius of the work site; (ii) emissions from the operation of construction equipment and machinery; and (iii) fugitive emissions from vehicles plying the area and during the transport of construction materials. Most of the emissions will be in the form of coarse particulate matter and will settle down in the vicinity close to the work sites, with small quantities in a large space. Except for installing the 430-m pressure pipeline from the pumping station to the elevated water tank to

be located in Village 3 of Tan Ha commune, most of the working sites are far from residential areas. The impacts are assessed to be minor, local, short-term, direct, and reversible.

95. **Mitigation measures:** The following measures will be implemented at the worksites:

- Excavated material and stockpiles will be kept moist.
- Watering activities along the community road will be conducted during cutting of concrete, excavation activities, and leveling after completion of pipe installation to suppress dust at all times and avoid complaints by villagers.
- Transport vehicles will be required to install tarpaulin covers or other suitable material to prevent spillage of the hauled materials.
- Construction equipment and vehicles will, at all times, be well maintained and in good working condition to reduce fugitive emissions.
- Speed limits will be imposed in construction sites to minimize dust emission.

iv. Noise

96. **Impact.** Construction activities may cause noise and vibration impacts for a short duration. The operation of equipment for the installation of the distribution network may cause a nuisance to adjacent residential houses living along 430 m of the pressure pipe located in Village 3 of Tan Ha Commune.

97. **Mitigation measures.** To mitigate the adverse impacts identified, contractors will be required to:

- Limit work hours at the sites to 0700H–1800H.
- Install stationary equipment like diesel generators as far as practicable from sensitive receptors. Buffers will also be established as further mitigation.

v. Community Health and Safety

98. **Impact.** During the works, the community may be exposed to health and safety risks from increased vehicular movements in the area, open excavations, the operation of heavy equipment, and conflicts between locals and migrant workers.

99. **Mitigation measures.** Contractors will be required to:

- Install barricades/barriers and sturdy plate covers in open excavations during non-working time;
- Install warning signs in the area and fence the area to prevent any unauthorized entry of people to the construction sites;
- Provide priority hiring of qualified construction workers from the villages and consult with the local authorities to avoid conflicts if migrant workers are brought to the site.

vi. Occupational Health and Safety

100. **Impact.** The implementation of the works may result in hazards to the safety of workers, such as tripping, slippery surfaces, carrying heavy loads, and during operation of machines and equipment and electricity.

101. Mitigation measures**.** The contractor will be required to

- assess occupational health and safety as a part of site specific EMP prepared before construction commenced;
- provide specific OHS training/briefing to all workers

- provide appropriate Personal Protective Equipment (PPE) to all workers,
- provide first- aid kits at the construction work readily accessible by workers;
- ensure that vehicle and equipment operators are properly trained and licensed

vii. Temporary Traffic Disturbances and Community Road Damage

102. **Impact.** The transport of materials to sites of upgrading of existing canals, pumping station, and pipe laying for the distribution network will use the community roads. Thus, damage of the community road and traffic disturbances are possible adverse impacts of subproject construction due to the increase in traffic density in the sites. However, the impact is assessed to be small, local, short, and easily mitigated.

103. **Mitigation measures.** Contractors will be required to:

- Inform the local people and authorities about the duration of work at each specific site.
- Collaborate with the local traffic agency in installing signboards to instruct local travelers to reduce speeds or advise them on traffic rerouting.
- Avoid stockpiling and storing construction materials and parking on community roads.
- Clean worksites and fill up all holes on sites after ending the day's work to ensure that local people can transport without any potential of an accident.
- Bear all responsibility for rehabilitating any damage to community roads due to subproject construction.

c. Environmental Impacts during Operation

104. The potential long-term or permanent impacts of project development are most important and generally determine the level of impact assessment a water supply project requires. The potential long-term impacts include: (i) pipe leakages; (ii) occupational health and safety; and (iii) community health and safety.

i. Leaks in Pipelines

105. **Impact:** There is a potential risk of high water pressure that could cause bursting of pipes, although this is very low-risk occurrence.

106. **Mitigation measures.** The following measures will be implemented:

- Use of durable standard pipes for the pipelines;
- Careful construction supervision by the Contractor to ensure that pipe laying and joining are done according to the highest standards;
- Regular inspection of the network and prompt isolation and repair when leaks occur;
- Preventing locals from occupying the protected right of way (ROW) for cultivation.

ii. Occupational Health and Safety

107. The operation of the system would require equipment, which pose risks to the safety of the workers and staff. Proper guidance and adherence to occupational health and safety protocols need to be established in the said facilities in accordance with the World Bank's environment, health, and safety (EHS) guidelines (http://www.ifc.org/ehsguidelines) as a minimum standard.

iii. Community Health and Safety

108. The facilities that will be constructed will be properly fenced off and secured to restrict access and intrusion of unauthorized persons. Watchmen/security personnel will be hired to secure the facilities on a 24-hour basis. This would minimize the safety risks to the community.

VI. ANALYSIS OF ALTERNATIVES

A. Alternatives to the Subproject

109. The beneficiary villages in and around Thanh Son–Phuoc Nhon and Nhon Hai–Thanh Hai subprojects provided the basis for the selection of the subproject sites. The selection process adopted for WEIDAP involved screening and prioritization, following which candidate subprojects were selected for feasibility study (FS). The FS then confirmed the eligibility of the subproject for inclusion in the project. Prioritization was based on a set of criteria aimed primarily at ensuring alignment with Government priority, maximizing impact in terms of the number of population to be served and also maximizing the contribution to economic development and poverty alleviation.

B. Alternatives within the Subproject

110. Alternatives considered for the preliminary design included: (i) the configuration and location of the distribution system; (ii) alternative water sources/reservoirs; and (iii) village areas to be included. During the evaluation of possible service areas, the most populated and easily accessible villages were selected to be included in the irrigation improvement project.

111. Based on the principles of irrigation modernization, the project seeks to improve the level of service to enable farmers to receive reliable delivery of irrigation water, nearly on-demand, and at levels demanded by HVCs. Given this objective, the lower unit cost rehabilitation alternative is inconsistent with project objectives. As such, the unit (hectare) investment costs are higher. Proposed designs include piped distribution systems that not only reduce water losses but also reduce O&M requirements as distribution pipes are buried and less vulnerable to solar deterioration and physical damage. Given the extensive use of piped distribution, costs were minimized by limiting the offtake hydrants and ensuring that pipe diameters were appropriate to the system capacity. The project is not intended to rehabilitate (i.e., restore to the same level of service), but to enhance the level of service requiring a higher unit investment.

C. "No Project" Alternative

112. The "no project" alternative would mean that the opportunity to provide more cost-effective and high-technology irrigation systems highly suitable for the production of HVCs geared towards meeting Government of Viet Nam goals and priorities, would not be realized.

VII. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

A. Public Consultation

1. Methodology

113. A stakeholder consultation strategy was developed to meet the requirements of conducting meaningful consultation with stakeholders, as stipulated in the ADB SPS (2009). The strategy embodied the principles of meaningful engagement, transparency, participation, and inclusiveness to ensure that affected and marginalized groups, such as women and the poor, are given equal opportunities to participate in the planning of the subproject.

2. Identification of Related Stakeholders

114. Stakeholders were identified and engaged in a participatory manner. Stakeholder consultations focused on institutional stakeholders, affected communities, and persons directly affected by the proposed subproject interventions. The identified subproject stakeholders include: (i) Institutional stakeholders such as People's Committee and Commission (PCC), District People's Committee (DPC), PPMB, commune leaders, and design consultants. (The PPMB and design consultant provided information for the design of the subprojects and in the implementation of measures and interventions). Other stakeholders include the mass organizations, such as Women's Union and Farmers' Union, and villagers living in subproject areas, including beneficiaries and potential APs.

3. Public Consultation Meetings

115. Formal community consultation meetings were held to discuss the location and potential impacts on the environment and people of the TSPN subproject in six communes and of THNH subproject in two communes in four districts in Ninh Thuan province. The community consultation meeting was held on 23-25 August 2016. A total of 178 people participated in the consultation meetings, of whom women accounted for 20% and EMs with 33 people accounting for 18%. Majority of the EM participants were Raglai (70%) who live mainly in Phuoc Trung Commune, Bac Ai District. All the EMs can understand and speak Kinh language fluently. The list of public participants is summarized in **Table 11**.

Table 11: Participants during the Community Consultation Meetings

Districts	Communes/ Township	Officials		Households		Total			Ethnic Minorities	
		M	F	M	F	M	F	Total	No.	EM Group
Thanh Son – Phuoc Son subproject										
Ninh Hai	Tri Hai	3	1	20	1	23	2	25	0	Kinh
	Xuan Hai	3	0	15	1	18	1	19	3	Kinh, Chăm
Ninh Son	Nhon Son	4	2	11	3	15	5	20	7	Kinh, Cham
Thuan Bac	Bac Phong	4	1	12	3	16	4	20	0	Kinh
	Loi Hai	5	1	7	8	12	9	21	1	Kinh, Raglai
Bac Ai	Phuoc Trung	6	1	15	2	21	3	24	22	Raglai, Kinh
Thanh Hai – Nhon Hai subproject										
Ninh Hai	Thanh Hai	3	4	16	4	19	8	27	0	Kinh
	Nhon Hai	6	1	13	2	19	3	22	0	Kinh
4	8	34	11	109	24	143	35	178	33	3

M= Male; F=Female

116. The public meeting was conducted at each project commune in local language with loud speaker and consisted of the following component procedures:

- The engineering consultant introduced the subproject, including the basic designs of each subproject work located in the project commune area.
- The environmental consultant presented ADB's environmental policy, safety regulations in Viet Nam construction sector, anticipated environmental impacts and mitigation measures to be developed in the IEE, and the grievance redress mechanism (GRM) for environment and resettlement issues;
- The social/resettlement consultants presented ADB's resettlement policy, impacts due to the acquisition of land and properties, policies of the Government and local authorities, and subproject policies on compensation as required by the State;
- Open discussion of issues and concerns by the stakeholders.

a. Issues and Concerns Raised during the Public Consultation

117. During the meeting, the participants raised their questions and comments on the subprojects. The technical consultants and IEE national consultant, as representatives of the EA/IA, answered and all the questions raised by the participants. Following are the comments raised during the consultation meetings:

- The local people are highly in favour of the subproject as the area has no fresh water for drinking and no irrigation water for agricultural production. They suggested paying attention to the needs of EMs and compensation for those whose lands will be needed for the project facilities.
- The project will produce only minor impacts on the natural and social environments because the civil works are small and located far from residential areas that are sparsely populated. No sensitive and protected areas, as well as high-value trees are found in the area and nearby.
- If fresh water is provided to the area, the abandoned agricultural lands will be rehabilitated and their productivity restored.

118. The summary of the comments and questions from the authorities and local people, as well as the responses from the project owners, are summarized in **Table 12**.

Table 12: Summary of Participants' Inquiries

Location and time	Comments/questions from participants[7]	Addressed in IEE
Thanh Son – Phuoc Son subproject		
Tri Hai, Ninh Hai 23 August 2016	Local people are highly in favor of the subproject as the area has no fresh water for drinking and agricultural production. They said that compensation should be paid attention to.	Anticipated benefits will be generated by the subproject. Compensation policies were prepared and included in the RP report.
Xuan Hai, Ninh Hai 24 August 2016		
Nhon Son, Ninh Son 24 August 2016		
Bac Phong, Thuan Bac 25 August 25, 2016		
Loi Hai, Thuan Bac 25 August 2016		
Phuoc Trung, Bac Ai 24 August 2016	Local people are highly supportive of the subproject as this area has no fresh water for drinking and agricultural production. Minority people and compensation should be paid attention to during the project phases.	Benefits are expected from the subproject. Compensation and EM development measures are included in the RP and EM Development Plan reports that were prepared during the PPTA.
Thanh Hai–Nhon Hai subproject		
Thanh Hai, Ninh Hai 23 August 2016	Local people highly supported the project as this area lacks fresh water for agricultural production during summer. Compensation should be paid attention to.	Anticipated benefits will be generated by the subproject. Compensation policies were prepared and included in the RP report.
Nhon Hai, Ninh Hai 23 August 2016		
Conclusion	Subproject facilities will be constructed mainly on public land. However, a compensation policy will be developed to satisfy those who will lose their land and assets due to the subproject.	

B. Information Disclosure

119. Prior to project implementation, a copy of the approved Updated IEE and EMP will be submitted by CPMU to the DONRE in Ninh Thuan Province. The updated IEE will also be posted on the ADB and MARD websites. During construction and operation, communities within the impact area of the subproject will be kept informed of construction activities through billboards or information boards. The contact details of the PMU, GRM focal persons, and construction managers will be prominently displayed in the respective construction areas for the reference of the affected communities/persons. Complaints and grievances can be directly filed, both written and verbal, with the concerned entities. This will be an alternative to the village complaint system. All suggestions, opinions, and responses from the community regarding the project will be taken into account, and feedback provided on how concerns and recommendations have been addressed.

[7] Questions and issues raised during public consultation meetings were recorded in the table as received.

VIII. GRIEVANCE REDRESS MECHANISM

A. Purpose of the Mechanism

120. During the deployment of the subproject, local people will be provided with information on environmental protection activities, such as EMP. Negative impacts on the environment may occur during the construction and operational phases. Any comments/suggestions of local people will be solved quickly, transparently, and according to the law, particularly for AP. A complaint handling mechanism will be established, classified by level and including the responsibilities of involved parties.

B. Grievance Redress Mechanism

121. Affected persons will be informed of policies and procedures to ensure that their livelihood will not be severely affected by the subproject. AHs will also be informed that, if they have any questions or concerns regarding the subproject, PPMU will be responsible for providing assistance to resolve such concerns. The GRM consists of several steps, namely:

- **Step 1:** Complaint form will be sent by APs, AHs, or groups of HHs to the subproject CPC.
- **Step 2:** The Subproject CPC will investigate the complaint within 15 days. If it is judged to be valid, the Complaint Form will be forwarded to the PPMU.
- **Step 3:** Within 15 days from the date the complaint is received, the PPMU and Subproject CPC will organize meetings to discuss how to resolve the matter. All meetings will be recorded, and copies of the minutes of meetings will be provided to APs/AHs.
- **Step 4:** PPMU shall take such mitigation measures, as agreed in meetings, from Step 3 by PPMU and Subproject CPC within 15 days, or some other period acceptable to the parties referred to in Step 3.
- **Step 5:** When the complaint is resolved, the Complaint Form needs to be signed by Complainer/HH head, subproject CPC, PPMU, and annotated at each stage of the process by PPMU.
- **Step 6:** In case no understanding or amicable solution is reached, or if no response is received from the subproject CPC within 15 days after the registration of complaint, the APs/AHs can appeal to the DPC. The APs/AHs must lodge the complaint within 30 days of registering the original complaint and must produce documents with copies of appeal that support his/her claim. The DPC will provide a decision within one month of receiving the appeal.
- **Step 7:** If the APs/AHs are not satisfied with the decision, or in the absence of any response from DPC, the APs/AHs can appeal to the PPC, which will then review and issue a decision on the appeal within 30 days from the day it is received.
- **Step 8:** If the AP is still not satisfied with the decision of the PPC, or in the absence of any response within the stipulated time, the AP, as a last resort, may submit his/her case to the court, which will render the final decision.

C. Type of Grievances

Complainants are entitled to lodge complaints regarding any aspect of the project. Any affected person will be able to submit a grievance if he/she believes that a practice has a detrimental impact on the community, the environment, or their quality of life. Eligible grievances or complaints include:

- Negative impacts on a person or a community (e.g., financial loss, such as from loss of water or roadside trees, health and safety issues, nuisances, etc.).
- Dangers to health and safety or pollution of the environment;

- Hazards due to construction activities (e.g., noise, dust, disruption of access, etc.);
- Impacts on social infrastructure;
- Failure to comply with standards or legal obligations;
- Improper conduct or unethical behavior of contractor leading to the nuisance of affected person(s);
- Misuse of funds and other irregularities;
- Grievances due to land acquisition, resettlement, compensation, relocation, and unaddressed losses.
- Complaints related to gender issues.

D. Grievance Resolution Process

122. Complaints can be made verbally or in written form. It is recognized that, in many cases, complainants do not have the writing skills or ability to express their grievances verbally. However, complainants are encouraged to seek assistance from family members or village heads to have their grievances recorded in writing and to ensure that, where disputes occur, all the details have been recorded accurately to enable all parties to be treated fairly. In the case of verbal complaints, a written record of the complaint will be made during the first meeting with the complainant. Complainants, who present their complaints within the prescribed procedures, will be exempt from all administrative fees incurred. In addition, complainants who lodge complaints and appeals to district courts will be provided with free legal representation. If efforts to resolve complaints or disputes are still unresolved and unsatisfactory following the Government grievance redress mechanism, the AP/AHs have the right to send their concerns or problems directly to ADB's Operations Department (i.e., Natural Resources, Environment , and Agriculture Division (SEER), Southeast Asia Department (SERD) or through the ADB Vietnam Resident Mission (VRM). If the AP is still not satisfied with the responses of SERD, he/she can directly contact the ADB's Office of the Special Project Facilitator (OSPF), as outlined in the *Information Guide to the Consultation Phase of the ADB Accountability Mechanism*. The Information Guide can be downloaded through this link: https://www.adb.org/documents/information-guide-consultation-phase-adb-accountability-mechanism

IX. ENVIRONMENTAL MANAGEMENT AND MONITORING

A. Institutional Arrangements for Implementation

123. The CPMU under MARD, the Ninh Thuan Provincial Project Management Board (PPMB), and DARD are the key institutions that will play crucial roles in the implementation of the subproject and in ensuring that environment safeguards are enforced. CPMU/PPMU will recruit one Environment Safeguards Specialist (ESS) under the Loan Implementation Consultant (LIC) to support subproject implementation in Ninh Thuan. The ESS will support the PMU in updating the EMP and in monitoring the compliance of contractors during the construction phase. The ESS will also be responsible for training and capacity building on EMP implementation.

124. The PMUs will engage a Construction Supervision Consultant (CSC) for the monitoring and supervision of the subproject, including environmental monitoring. The CSC will also ensure that the contractors implement the provisions of the subproject EMP.

125. Following are the administrative and environmental management responsibilities of these institutions.

No.	Organization	Environmental Management Responsibilities
1.	CPMU	• Exercise general responsibility for entire supervision, monitoring, and preparation of environmental monitoring reports (EMRs) submitted to ADB.

No.	Organization	Environmental Management Responsibilities
		• Provide training on environmental safeguard policy for subproject staff. • Prepare bidding documents, including the Scope of Work for adverse environmental impact mitigation, as contained in the EMP. • Recruit an independent environmental monitoring consultant during subproject civil works implementation to monitor the implementation of the contractor's Site EMP. • Prepare periodic EMRs for submission to ADB.
2.	PPMU	• Deploy for implementation of all environmental protection and mitigation activities included in the subproject EMP during pre-construction and construction phases. • Prepare bidding documents and integrate environmental mitigation measures in the EMP to ensure that contractors comply fully and correctly with the regulations. • Supervise and report on the implementation, by the contractor, of those mitigation measures according to approved detailed EMP for construction activities. • Support the contractor in the implementation of mitigation measures during construction. • Facilitate effective coordination among the contractor, local authorities, and local communities during construction, establish linkages among all relevant parties during project implementation and environmental management work of the subproject. • Coordinate with the local governments in dealing with complaints (if any). • Prepare periodic reports to CPMU on the implementation of the subproject and the EMP.
3.	Contractor	• Prepare Contractors' Site Environmental Management Plan (SEMP) for construction activities to meet environmental management requirements for the subproject. Such detailed plans shall be approved by the project owner before the commencement of construction activities. • Implement measures specified in the approved SEMP, especially effective mitigation measures during construction and other issues related to the EMP for the subproject and propose amendments or alternative mitigation measures if necessary. • Proactively contact local community representatives and deploy measures to avoid unnecessary disturbances during the construction activities, train workers on knowledge of environmental issues during construction, and be responsible for implementation of SEMP and labor safety measures in the construction sites. • Ensure that all construction activities have secured necessary permits from competent authorities. • Report to PPMU on any difficulties faced and propose solutions. • Immediately report to the local authorities and PPMU any environmental accidents and coordinate with relevant authorizes and parties to solve the problem. • Solve any complaints concerning construction activities and conduct issues of workers. • Submit weekly/monthly reports on the implementation of mitigation measures to construction supervision consultant and PMU.
4.	Construction Supervision Consultant (CSC)	• Support PPMU in supervising environmental safeguards in accordance with the daily EMP. • Prepare a rapid periodic report on EMP implementation at the construction sites together with proposed improvements to the Contractor for synthesis and submission to PPMU. • Maintain contacts with the local communities.

No.	Organization	Environmental Management Responsibilities
		• Support PPMU in resolving any construction-related complaints following the subproject's GRM.
5.	Project Implementation Consultant (PIC)	• Support CPO/PMU to procure environmental monitoring contract; • Work closely with CSC and independent environmental monitoring consultant (IEMC) to support the PPMU in monitoring and supervision of EMP implementation and ensure environmental compliance in each subproject. • During the construction phase, support the PPMB to prepare and submit semi-annual EMRs to CPO/PMU (on behalf of MARD) and ADB for review and uploading on ADB's website.
6.	Environment Safeguard Specialist (ESS)	• Assist CPO/PMU with the review of the IEEs and associated EMPs prepared for each subproject during the PPTA and assist with updating the EMPs in response to requirements of the detailed engineering design. • Brief the staff of the CPO/PMU and DARD/PPMUs on the environmental procedures and requirements for subproject implementation (construction and operations). • In cooperation with the M&E specialists, develop the indicators that need to be monitored for groundwater quality and levels that can be incorporated into routine project monitoring activities. • Support PPMU to establish an environmental management system that links with CPO/PMU environment management, including the procedures of construction inspection and monitoring, periodic reporting, and responsibilities of each party in the project's environment management system. • Support CPO/PMU to procure independent environmental monitoring contract and support the IEMC to prepare semi-annual EMRs to be submitted to CPO/PMU and ADB for review and uploading on ADB's website; • Visit each subproject during construction to ensure that environment safeguards are being properly conducted in accordance with the subproject EMP; • Develop environmental management procedures to be adopted by both the provincial IMCs in operating the system storage facilities to sustain environmental flows and the PPP irrigation operators drawing water from existing reservoirs to pump to beneficiary farmers within newly established command areas. • Assist in developing operational guidelines for water utilization by beneficiary farmers to maximize the efficient use of water from irrigated agriculture. • Assist in the preparation and implementation of training activities with regard to the environmental aspects of the project.
7.	Independent Environmental Monitoring Consultant (IEMC)	• Conduct periodic independent supervision of contractor's implementation of SEMP. • Perform quarterly environmental quality monitoring of key analytical parameters (i.e., air, water, soil, noise, etc.) in the subproject sites to assess the effectiveness of mitigation measures in addressing construction-related adverse environmental impacts during the construction and operations phases. • Collaborate with/support PPMU and the Contractor in the effective implementation of the EMP in the construction areas.
8.	Systems Operating Organization	• Be responsible for environmental management during the operation period of the subproject. • Implement mitigation measures during the O&M period.

No.	Organization	Environmental Management Responsibilities
9.	Local Resident Communities	• Local resident communities have the right and responsibility to conduct preliminary supervision of activities related to the environment during the construction phase to ensure their rights and safety is adequately protected, and that mitigation measures are effectively implemented by the contractor and PPMU. They shall report any unexpected environmental issues arising from the construction works to the CSC/PPMU/CPCs.
10.	Local Governments: PPC, DPC, and CPC of the Subproject Area	• Monitor the implementation of the subproject based on recommendations of the provincial DONRE and PPMU to ensure compliance with the regulations and policies of the Government.
11.	Provincial Environmental Management Agency	• DONRE is the provincial environmental management agency, representing MONRE in managing environmental issues in the province. • DONRE will be responsible for the supervision of compliance with environmental regulations of the Government during various implementation phases of the subproject.
12.	Other Concerned Parties	• Advise and inform of any aspects related to the environmental management and protection regulations of Vietnam. • Provide technical support during the construction of the subproject, as necessary. • Participate in the resolution of environment-related issues (if any).

B. Environmental Management Plan (EMP)

126. The anticipated environmental impacts and mitigation measures discussed in the previous section is presented in **Tables 13** and **14** for the TSPN and NHTH subprojects, respectively. The responsibilities and timeframe/schedule for implementation of mitigation measures of stakeholders are mentioned in the tables, showing that most mitigation activities during pre-construction are to be implemented by the PMU/ESS, while during construction, measures will be primarily implemented by the contractors. During the operational phase, DARD will undertake the environmental mitigation and monitoring requirements specified in the EMP. To ensure implementation of mitigation measures during construction, the EMP will be included in the tender and contract documents for civil works. Contractors' conformity with environmental contract procedures and specifications will be regularly monitored by PMUs with assistance from the Construction Supervision Consulant (CSC), and the results will be reported semi-annually to ADB.

127. The Ninh Thuan DARD will be in charge of EMP implementation during the operation phase. The tasks include monitoring of water quality, leaking pipelines, and community and occupational health and safety.

Table 13: Detailed Environmental Management Plan for the Thanh Son–Phuoc Nhon Subproject

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
A. Pre-construction Phase						
Land acquisition and resettlement	Control the impacts of land acquisition and resettlement.	• Implement the updated land acquisition and compensation plan that was approved by the ADB for the subproject. • Design access roads to minimum necessary width and installation of pipelines within the ROW, when feasible.	PMU/ESS	Before construction	N/A	Included in the contract with ESS and PMU operation budget
Environmentally responsible procurement	To ensure proper EMP implementation by the selected contractors.	• Update EMP • EMP is included in tender documents to ensure that mitigation measures are budgeted and to prepare the contractors for environmental responsibilities. • Specify in bid document that Contractors shall engage capable and trained staff to take responsibility for the environmental management and safety issues at the working level and to monitor the effectiveness and review mitigation measures as the subproject proceeds. • Contractors recruit qualified staff to oversee implementation of environmental and	ESS/PMU	Before bidding and before construction commencement	N/A	Included in the contract with ESS and PMU operation budget

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
		safety measures specified in EMP.				
environmental capacity development	To develop environmental management capacity of PMU to ensure proper EMP implementation and promote environmental awareness among workers.	• PMU to commit and retain dedicated staff for subproject duration to oversee EMP implementation. • ESP to train PMU to build their capacity on EMP implementation, monitoring and reporting using workshops and on-the-job training techniques and case studies. • Conduct workers' orientation on EMP provisions. Such orientation shall be periodically conducted by the ESP as every new contractor is engaged.	PMU/ESS	Throughout the pre-construction and construction phases	N/A	Included in the contract with ESS and PMU operation budget
B. Construction Phase						
Disturbance cultivation activities		• Contractors will cooperate with local people and authority to arrange pipe installing plan through farmland with specific working method to ensure no disturbance on cultivation activities. • Contractors will not be allowed to temporarily stockpile and gather construction materials on ways that may prevent farmers from their cultivation activities. • Contractor will prepare a temporary access				

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
		road for farmers before installing pipe line across their access roads. • Contractor will be required to immediately rehabilitating the excavated areas and any damaged road and path sections.				
Waste management	To avoid or minimize negative impacts on the environment due to improper management of wastes at sites.	**Excavated soil** • Any surplus material will be disposed properly and given for free to interested villagers as backfill materials in coordination with the village authority. **Construction wastes** • These wastes are collected and classified for reusing or recycling otherwise treated in Nam Thanh Solid Waste Management Factory to ensure no danger to people. **Domestic wastes** • Contractor will provide dustbin for worker camps to ensure all domestic wastes will be collected and properly treated in Nam Thanh Solid Waste Treatment Factory. **Hazardous wastes** • Secure and control storage of all hazardous materials including fuels, lubricants	PMU/Contractor	During civil works, transportation	N/A	Included in civil works cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
		following Circular 36/2015/BTNMT.				
Dust and gas emissions	To minimize dust and gas emissions at sites to protect the environment.	• Excavated material and stockpiles will be kept moist while transport vehicles will be required to install tarpaulin covers or other suitable material to prevent spillage of the hauled materials. • Construction equipment and vehicles will, at all times, be well maintained and in good working condition to reduce fugitive emissions.	PMU/Contractor	During civil works, transportation	N/A	Included in civil works cost
Noise	To minimize noise at sites to avoid any nuisance to communities.	• Work at the sites will be limited only during the daytime from 0700H to 1800H. • Stationary equipment like the diesel generators will be installed as far as practical from sensitive receptors. Buffers will also be established as further mitigation.	PMU/Contractor	During civil works, transportation	N/A	Included in civil works cost
Community health and safety	To minimize risk of local exposure to danger of open excavation and conflicts with migrant workers.	• Install barricades/barriers and sturdy plate covers in open excavations during non-working time. • Install warning signs in the area. • Require the contractor to provide priority hiring of qualified construction workers from the villages and to consult with the	PMU/Contractor	Throughout the construction phase	N/A	Included in civil works cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
		local authorities to avoid conflicts if migrant workers will be brought to the sites.				
Occupational health and safety	To minimize risks of workers when working at sites.	• Require the contractor to implement the construction health and safety plan in accordance with the World Bank EHS Guidelines as a minimum standard. The contractor will appoint an environment, health and safety officer to ensure implementation of the plan. The plan will at minimum include: ○ Provision of first-aid facilities readily accessible by workers; ○ Provision of personal protective equipment (PPEs) such as hard hats, gloves, rubber boots, etc.; ○ Wearing of PPEs while working onsite will be a mandatory requirement for workers; ○ Posting of safety signs/reminders in strategic areas within the construction area; ○ Ensure that vehicle and equipment operators are properly licensed and trained; and	PMU/Contractor	Throughout the construction phase	N/A	Included in civil works cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
		○ Provide staff with communicable disease and HIV-related awareness training.				
Traffic safety and damage to community roads	To avoid traffic accidents.	• Conduct transportation road field study to assess the status of community road quality and identify any black pots in the roads with a high risk of traffic accident before construction. • Collaborate with local transportation to install traffic sign boards at the identified black pots. • Use appropriate kind of vehicles based on the road situation to avoid heavy damage on the community roads. • Bear all responsibility for the rehabilitation or compensation to any road damage caused by the subproject construction.	PUM/Contractor	Throughout the construction phase		Included in civil works cost
C. Operation Phase						
Pipeline leaks	To protect the pipeline from damages.	• Use durable standard pipes for the pipelines. • Careful construction supervision by the Contractor to ensure that pipe laying and joining is done with the highest standard. • Regular inspection of the network and	Irrigation Division/DARD	Throughout the operation phase	Along alignment	Operation cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
		prompt isolation and repair when leaks occur.				
Occupational health and safety	To prevent operational staff and workers from any occupational risks.	• Proper guidance and adherence to occupational health and safety protocols need to be established in the said facilities in accordance with the World Bank EHS Guidelines (http://www.ifc.org/ehsguidelines) as a minimum standard.	Irrigation Division/DARD	Throughout the operation phase	N/A	Operation cost
Community health and safety	To prevent locals from electric accidents due to exposure to domestic electric lines.	• Project should provide a training course on techniques of effective application and safety for those who are planned to use the subproject water.	Irrigation Division/DARD	Throughout the operation phase	N/A	Operation cost

Table 14: Detailed Environmental Management Plan of Nhon Hai–Thanh Hai Subproject

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
A. Pre-construction Phase						
Land acquisition and resettlement	Control the impact of land acquisition and resettlement	• Implement the updated land acquisition and compensation plan that was approved by the ADB for the subproject. • Design access roads to minimum necessary width and installation of pipelines within the Right-of-Way when feasible.	PMU/ESP	Before construction	N/A	Included in the contract with ESP and PMU operation budget
Environmentally responsible procurement	EMP is properly implemented by selected contractors	• Update EMP. • EMP is included in tender documents to ensure that mitigation measures are budgeted and to prepare the contractors for environmental responsibilities. • Specify in bid document that Contractors shall engage capable and trained staff to take responsibility for the environmental management and safety issues at the working level and to monitor the effectiveness and review mitigation measures as the subproject proceeds. • Contractors recruit qualified staff to oversee implementation of environmental and safety measures specified in EMP.	ESP/PMU	Before bidding and before construction commencement	N/A	Included in the contract with ESP and PMU operation budget
Environmental Capacity Development	Develop environmental management capacity of PMU to ensure proper EMP implementation and	• PMU to commit and retain dedicated staff for subproject duration to oversee EMP implementation. • ESP to train PMU to build their capacity on EMP implementation, monitoring and reporting using workshops and on-the-job training	PMU/ESP	Throughout the pre-construction and construction phases	N/A	Included in the contract with ESP and PMU operation budget

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
	promote environmental awareness among workers.	techniques and case studies. • Conduct workers' orientation on EMP provisions. Such orientation shall be periodically conducted by the ESP as every new contractor is engaged.				
II. Construction phase						
Disturbance cultivation activities		• Contractors will cooperate with local people and authority to arrange pipe installing plan through farmland with specific working method to ensure no disturbance on cultivation activities. • Contractors will not be allowed to temporarily stockpile and gather construction materials on ways that may prevent farmers from their cultivation activities. • Contractor will prepare a temporary access road for farmers before installing pipe line across their access roads. • Contractor will be required to immediately rehabilitating the excavated areas and any damaged road and path sections.				
Waste management	To avoid or minimize negative impacts on environment due to improper management of wastes at sites	**Excavated soil** • Any surplus material will be disposed properly and given for free to interested villagers as backfill materials in coordination with the village authority. **Construction wastes** • These wastes are collected and classified for reusing or recycling otherwise treated at Nam	PMU/Contractor	During civil works, transportation	N/A	Included in civil works cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
		Thanh Solid Waste Treatment Factory **Domestic wastes** • Contractor will provide dustbin for worker camps to ensure all domestic wastes will be collected and properly treated at Nam Thanh Solid Waste Treatment Factory **Hazardous wastes** • Secure and control storage of all hazardous materials including fuels, lubricants following Circular 36/2015/BTNMT.				
Dust and Gases emission	To minimize dust and gases emission at sites to protect environment	• Excavated material and stockpiles will be kept moist while transport vehicles will be required to install tarpaulin covers or other suitable material to prevent spillage of the hauled materials. • Construction equipment and vehicles will, at all times, be well maintained and in good working condition to reduce fugitive emissions.	PMU/Contractor	During civil works, transportation	N/A	Included in civil works cost
3.Noise	To minimize noise at sites to avoid any nuisance to communities	• Work at the sites will be limited only during the daytime from 0700H to 1800H. • Stationary equipment like the diesel generators will be installed as far as practical from sensitive receptors. Buffers will also be established as further mitigation.	PMU/Contractor	During civil works, transportation	N/A	Included in civil works cost
8.Community health and safety	To minimize risk of local exposing to danger of open excavation and any	• Install barricades/barriers and sturdy plate covers in open excavations during non-working time. • Install warning signs in the area.	PMU/Contractor	Throughout the construction phase	N/A	Included in civil works cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
	conflict with migrant workers	• The contractor will be required to provide priority hiring of qualified construction workers from the villages and to consult with the local authorities to avoid conflict if migrant workers will be brought to the site.				
9.Occupational health and safety	To minimize risks of workers when working at sites	• Require the contractor to implement the construction health and safety plan in accordance with the World Bank EHS Guidelines (http://www.ifc.org/ehsguidelines) as a minimum standard. The contractor will appoint an environment, health and safety officer to ensure implementation of the plan. The plan will at minimum include: o Provision of first-aid facilities readily accessible by workers; o Provision of personal protective equipment (PPEs) such as hard hats, gloves, rubber boots, etc.; o Wearing of PPEs while working onsite will be a mandatory requirement for workers; o Posting of safety signs/reminders in strategic areas within the construction area; o Ensure that vehicle and equipment operators are properly licensed and trained; and o Provide staff with communicable disease and HIV-related awareness training.	PMU, Contractor	Throughout the construction phase	N/A	Included in civil works cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
10.Traffic safety and damage of community road	To avoid traffic accident	• Conduct transportation road field study to assess the status of community road quality and identify any black pots in the roads with a high risk of traffic accident before construction. • Collaborate with local transportation to install traffic sign boards at the identified black pots; • Use appropriate kind of vehicles based on the road situation to avoid heavy damage on the community roads; • Bear all responsibility for the rehabilitation or compensation to any road damage caused by the subproject construction.	PMU/Contractor	Throughout the construction phase	Community roads used for transporting materials to sites	Included in civil works cost
C. Operation Phase						
2.Leak of pipeline	To protect the pipeline from any damages	• The use of durable standard pipes for the lines. • Careful construction supervision by the Contractor to ensure that pipe laying and joining is done with the highest standard. • Regular inspection of the network and prompt isolation and repair when leaks occur.	Irrigation Division/DARD	Throughout the operation phase	Along alignment	Operation cost
3.Occupational health and safety	To prevent operational staff and workers from any occupational risks	• Proper guidance and adherence to occupational health and safety protocols need to be established in the said facilities in accordance with the World Bank EHS Guidelines (http://www.ifc.org/ehsguidelines) as a minimum standard.	Irrigation Division/DARD	Throughout the operation phase	N/A	Operation cost

Environmental Concern	Objective	Impact Mitigation				
		Mitigation Measures	Responsibility	Timing	Location	Mitigation Cost
4.Community health and safety	To prevent locals from electric accident due to exposing to domestic electric line	• Project should provide a training course on techniques of effective application and safety for those who are planned to use the subproject water.	Irrigation Division/DARD	Throughout the operation phase	N/A	Operation cost

C. Environmental Monitoring

1. Compliance Monitoring

128. **Table 15** shows the program for monitoring compliance with various provisions of the EMP during the pre-construction, construction, and operation phases. The ESS needs to implement a number of measures during the detailed design phase (e.g., incorporation of environmental design measures into the detailed design, updating of EMP, etc.), and these will be confirmed by CPMU/ PPMU (PMU) with ADB. During construction, most of the mitigation measures will be implemented by the contractors and their environmental performance, in terms of implementation of such measures, will be monitored by the CSC and ESS. The timing or frequency of monitoring is also specified in **Table 15**. During operation, EMP implementation will be the responsibility of Ninh Thuan DARD.

129. At the design phase, PMU will ensure that EMP measures are incorporated in the detailed design. The incorporation of the EMP in the civil works contracts will also be ensured by PMU with assistance from the ESS and this, along with the implementation of EMP provisions, will be audited by ADB as part of the loan conditions.

130. Prior to implementation of the subproject, the IEE and EMP will be updated and amended, as necessary, by the ESS after the detailed designs are completed and contracting arrangements are known. Such updating will be based on a reconfirmation and any additional information on the assumptions made at the feasibility stage on the location, scale, and expected conditions of the subproject.

131. In the pre-construction phase, PMU, with support from the ESS, will prepare all environmental protection compliance certificates under Viet Nam's regulations, as guided by LEP 2014. The CSC and the ESS will also need to confirm that the contractors and their suppliers have complied with all statutory requirements for permits from DONRE and provincial authorities. The CSC and ESP will check that contractors have all the necessary valid licenses and permits for use of powered mechanical equipment, if necessary, and the use of local water supplies (and to construct or operate plants, such as for cement batching or asphalt/bitumen, if required) in line with all environmental regulations and permit conditions from provincial authorities.

132. During construction, the ESS will undertake regular monitoring of the contractor's implementation of the mitigation measures specified in the subproject EMP, if applicable. On the other hand, the CSC will monitor the construction activities on a daily basis. They will ensure that the contractors comply with all environmental regulations, as specified in the subproject EMP, if applicable.

2. Environmental Effects Monitoring

133. Environmental effect monitoring of water and air quality will be not undertaken because the all impacts assessed to be minor, locality, short and reversible.

Table 15: Environmental Compliance Monitoring

Environmental Concern	Parameter to Monitor	Location	Frequency and Verification	Responsible for Monitoring	Monitoring Cost
A. Design and Pre-construction Phase					
Land acquisition and resettlement	Compensation documents	N/A	Only once before tconstruction commences	Ninh Thuan DARD/ DONRE; PMU	Included in the operation budget of PMU
Environmentally responsible procurement	Inclusion of EMP in bidding documents	N/A	Bidding preparation period before start of site works	PMU	Included in the operation budget of PMU
Environmental capacity development	Require in contract with ESS. Check at Detailed Design. Complete training and check before and during the construction works.	N/A	Before construction commences and at the beginning of the construction phase	PMU	Included in the operation budget of PMU
B. Construction Phase					
Disturbance of local cultivation activities and disruption of paddy irrigation service	Check during implementation	Construction sites of pipeline installation and upgrading of existing canal	Bi-weekly and spot checks Part of daily construction supervision	ESS/ PMU	Included in the operation budget of PMU/ ESS/ CSC
Waste management	Check during implementation	All work sites	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ESS/ CSC
Dust and gas emissions	Check implementation	N/A	Bi-weekly and spot checks Part of daily construction supervision	ESS/ PMU	Included in the operation budget of PMU/ ESS/ CSC
Noise	Check during implementation	N/A	Bi-weekly and spot checks Part of daily construction supervision	ESS/ PMU	Included in the operation budget of PMU/ESS CSC

Environmental Concern	Parameter to Monitor	Location	Frequency and Verification	Responsible for Monitoring	Monitoring Cost
Occupational health and safety Community health and safety	Check during implementation. Check compliance with Labor Code of Viet Nam and other relevant Decisions, Decrees, and Circulars under Government requirements	Throughout construction sites, quarries and borrow areas, transportation road	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ESS/ CSC
Traffic accidents and blockage of access roads	Check during implementation	N/A	Bi-weekly Part of daily construction supervision	ESS/ PMU CSC	Included in the operation budget of PMU/ESS/ CSC
C. Operational Phase					
Protection of pipeline system		N/A	Semi-annual in the first two years	DARD/ESS	Included in operation and maintenance cost
Occupational and community health and safety	Check during implementation	Alignment	Semi-annual	DARD/ESS	Included in the operation budget of PPC

D. Reporting

134. PMU will submit environmental monitoring reports to ADB. The reports will cover the status of EMP implementation in terms of required mitigation measures for different phases of the subproject, necessary remedial actions to effectively address negative environmental impacts due to subproject implementation, status of environmental capacity building activities, documentation of complaints received, and corresponding action/resolution. The EMRs will be submitted to ADB semi-annually during the construction phase and annually for two years after completion of construction (**Table 16**).

Table 16: Reporting Procedures

Project Phase	Type of Report	Frequency	Responsibility	Submitted to Whom
Construction	**Environmental Performance Report** indicating compliance with EMP and monitoring results at the contractor site	Monthly	Construction contractor	CSC
	Subproject EMP Compliance Report indicating compliance with subproject EMP and monitoring results	Quarterly	CSC	PMU
	EMP Compliance Report indicating compliance with subproject EMP and monitoring results.	Semi-annually during construction phase	ESS/PMU	ADB
Operation	**EMP Compliance Report: Operation** indicating compliance with subproject EMP commitments during operation	Annually in the first two years of operation. Ongoing frequency to be determined based on review after 2 years.	Ninh Thuan DARD	Ninh Thuan DONRE

E. Environmental Management Implementation Costs

135. The cost of EMP implementation during construction phase will be included (i) the cost for implementation of mittigation measures which will be intergrated in the civil contract package and; (ii) the cost for environment management and monitoring including the cost for 06 man-months of environment saguard specialist and the cost for Independent Environment Monitoring Consultant, estimated about $ 90,000.

136. The cost of EMP implementation during the operational phase will be borne by the Irrigation Management Company (IMC) as part of O&M activities.

X. CONCLUSION AND RECOMMENDATIONS

137. This IEE for the Ninh Thuan Province subprojects was undertaken to identity the environmental issues and concerns associated with the proposed irrigation subprojects, following

modifications of the initial plans that were presented during project preparation. The modifications made are considered more suitable in terms of ensuring better irrigation water quality and quantity. The assessment confirms that the subproject remains classified as **Category B** for environment based on ADB's SPS (2009).

138. Beneficial impacts are expected in terms of the health and well-being of people because of the proposed irrigation subprojects in Ninh Thuan Province. Principal benefits will be derived from the improved accessibility to reliable irrigation water supply as well as economic benefits in the form of better returns from planting high-value crops and more cost-effective utilization of irrigation water by the farmers from the introduction of, and improved access to, high-technology irrigation systems.

139. **Most of the environmental impacts are expected to occur during the construction phase. The environmental impacts are not expected to cause irreversible and significant adverse environmental impacts,** and are easily controllable through the application of appropriate and conventional mitigation measures. Based on the assessment of environmental impacts, the anticipated adverse impacts during project implementation are related to nuisances which may happen during the construction of the subproject components, such as temporary alienation of access, temporary disruption of community facilities, noise, and sediment runoff, and release of dust and engine gas emissions. **Recommendations formulated in the EMP, its inclusion in the contractual framework, and an effective inspection of construction sites will reduce these risks to an acceptable level.**

140. Environmental mitigation measures have been designed, as outlined in the subproject EMP, to address any adverse impacts during the various phases of project implementation. The EMP also presents the institutional responsibilities for implementing the mitigation measures. All subproject activities prior to construction, during construction, and during operation will be managed as provided in the EMP, and the Contractor's compliance and implementation of the mitigation measures shall be monitored. An environmental monitoring plan has been provided to ensure compliance with prevailing GOV standards.

141. The IEE concludes that the subproject information on the affected environment is sufficient to identify the scope of environmental impacts of the subproject, and **no further environmental assessment is, therefore, required.**

Appendix 1

PICTURES AND MINUTES OF FIELD SURVEYS AND PUBLIC CONSULTATIONS

A. Thanh Son – Phuoc Son Subproject

- **Public Meeting at Xuan Hai Commune**


- **Public Meeting at Nhon Son Commune**


- **Public Meeting at Bac Phong Commune**


- **Public Meeting at Phuoc Trung Commune**


- **Watering Area of Thanh Son – Phuoc Son Subproject**

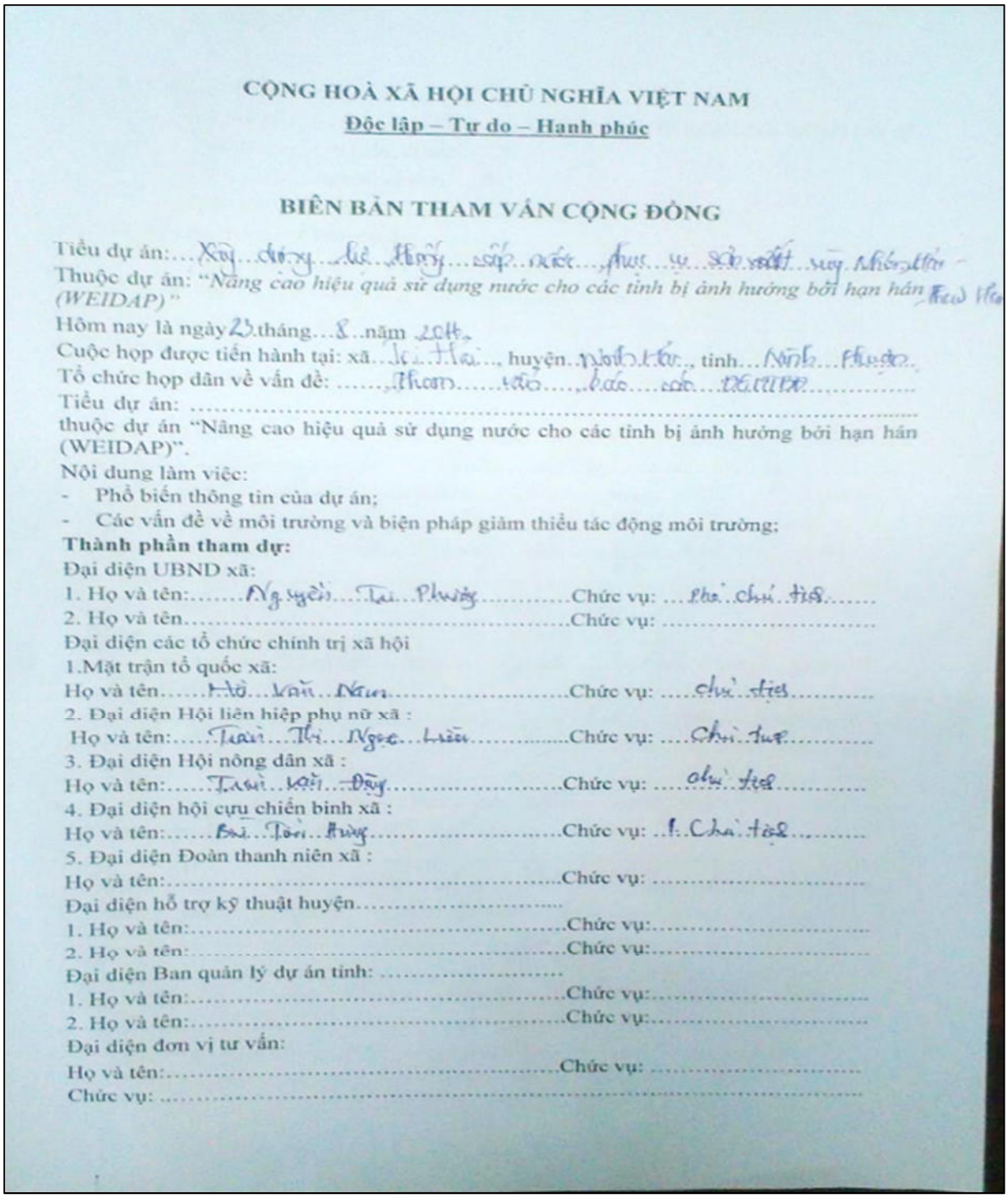

B. Nhon Hai-Thanh Hai Subproject

- **Public Meeting at Thanh Hai Commune**


- **Public Meeting at Nhon Hai Commune**


MINUTES OF CONSULTATION MEETINGS

A. Tri Hai Commune



CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

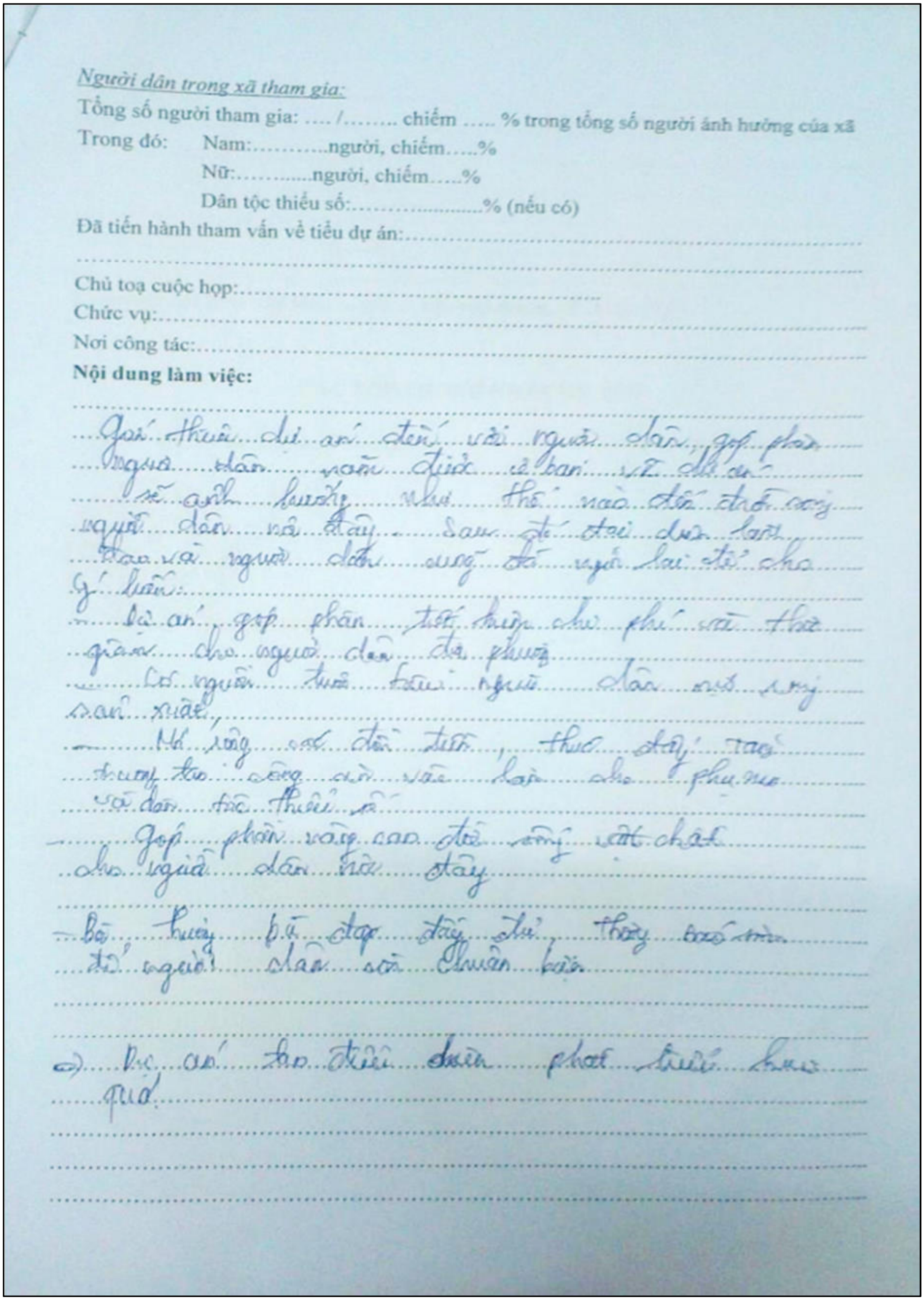
Tiểu dự án:... Xây dựng hệ thống cấp nước, thực vụ sản xuất vùng nhiễm mặn -
Thuộc dự án: "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"
Hôm nay là ngày 23 tháng 8 năm 2011
Cuộc họp được tiến hành tại: xã Tri Hai, huyện Châu Thành, tỉnh Ninh Thuận
Tổ chức họp dân về vấn đề: ..... tham vấn báo cáo ĐTM .....
Tiểu dự án: .....
thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".
Nội dung làm việc:

- Phổ biến thông tin của dự án;
- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:

Đại diện UBND xã:
1. Họ và tên: Ng người Tại Phương ..... Chức vụ: Phó chủ tịch .....
2. Họ và tên ..... Chức vụ: .....

Đại diện các tổ chức chính trị xã hội
1.Mặt trận tổ quốc xã:
Họ và tên: Võ Văn Năm ..... Chức vụ: chủ tịch .....
2. Đại diện Hội liên hiệp phụ nữ xã :
Họ và tên: Trần Thị Ngọc Liên ..... Chức vụ: Chủ tịch .....
3. Đại diện Hội nông dân xã :
Họ và tên: Trần Văn Đây ..... Chức vụ: chủ tịch .....
4. Đại diện hội cựu chiến binh xã :
Họ và tên: Bùi Tấn Hùng ..... Chức vụ: Chủ tịch .....
5. Đại diện Đoàn thanh niên xã :
Họ và tên: ..... Chức vụ: .....
Đại diện hỗ trợ kỹ thuật huyện .....
1. Họ và tên: ..... Chức vụ: .....
2. Họ và tên: ..... Chức vụ: .....
Đại diện Ban quản lý dự án tỉnh: .....
1. Họ và tên: ..... Chức vụ: .....
2. Họ và tên: ..... Chức vụ: .....
Đại diện đơn vị tư vấn:
Họ và tên: ..... Chức vụ: .....
Chức vụ: .....



Người dân trong xã tham gia:

Tổng số người tham gia: ..../........ chiếm ..... % trong tổng số người ảnh hưởng của xã

Trong đó: Nam:...........người, chiếm.....%

Nữ:............người, chiếm.....%

Dân tộc thiểu số:......................% (nếu có)

Đã tiến hành tham vấn về tiểu dự án:...

Chủ toạ cuộc họp:...

Chức vụ:..

Nơi công tác:...

Nội dung làm việc:

Giới thiệu dự án đến với người dân, góp phần người dân nắm được cơ bản về dự án sẽ ảnh hưởng như thế nào đến đời sống người dân nơi đây. Sau đó đại diện lãnh đạo và người dân cũng đã ngồi lại để cho ý kiến:

- Dự án góp phần tiết kiệm chi phí và thời gian cho người dân địa phương
- Có nguồn thu hút người dân vào sống sản xuất,
- Mở rộng các đoạn tuyến, thúc đẩy tạo thương tác công ăn việc làm cho phụ nữ và dân tộc thiểu số
- Góp phần nâng cao đời sống vật chất cho người dân nơi đây
- Bồi thường hỗ trợ đầy đủ, thông báo sớm để người dân sớm chuẩn bị.

=> Dự án tạo điều kiện phát triển hiệu quả.

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Cuộc họp kết thúc vào lúc:.....giờ.... ngày 23 tháng..8..năm.2016.

CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã .....Tứ Hạ.....

Đ/D: Cơ quan tư vấn

PHÓ CHỦ TỊCH

Nguyễn Như Phương

U.B.N.D XÃ TRI HẢI H. NINH HẢI T. NINH THUẬN

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

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DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Tiểu dự án: ...Xây dựng hệ thống cấp nước phục vụ sản xuất vùng Nhơn Hải [cut off]

Thuộc dự án: *"Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"*

Địa điểm: ......Xã Tri Hải..................

Thời gian: ...... giờ......, ngày 23 tháng 8 năm 2016.

TT	Họ và tên	Tuổi	Dân tộc	Giới tính		Chữ ký
				Nam	Nữ	
1	Huỳnh Ngọc Khiêm	39	Kinh	X		
2	Nguyễn Văn Đức	60	Kinh		nữ	
3	Nguyễn Văn Nên	54	"	X		
4	Trần Quang Lộc	Tuổi [illegible]	Kinh	X		
5	Trần Lộc	56	"	X		
6	Châu Xuân Bình	61				
7	Nguyễn Văn Nhi	1956	Kinh	X		
8	Trần Xuân Hùng	1969	Kinh	X		
9	Lâm Sĩ Nhu	1951	Kinh	X		
10	Nguyễn Xem	1964	Kinh			
11	TRẦN VĂN LÂM	1974	Kinh			
12	Trần Văn Chuyển	1960	Kinh	X		
13	Bùi Tấn Hưng	1963	Kinh	X		
14	Nguyễn Văn Được	1953	Kinh	X		
15	Trần Văn Tùng	1961	Kinh	X		
16	Hồ Văn Nam	1971	Kinh	X		
17	Trần Văn Thủy	[illegible]	[illegible]	X		
18	Nguyễn Văn Phong					
19	Phan Lộc	1970	Kinh	X		
20	Trần Diệp Lam					
21	Trần Thị Ngọc Điều					

B. Nhon Son Commune

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

Tiểu dự án: Xây dựng mô hình sản xuất nông nghiệp công nghệ cao Thành Sơn - Nhơn Sơn
Thuộc dự án: "*Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)*"
Hôm nay là ngày 29 tháng 8 năm 2016
Cuộc họp được tiến hành tại: xã Nhơn Sơn, huyện Ninh Sơn, tỉnh Ninh Thuận
Tổ chức họp dân về vấn đề: tham vấn kế hoạch ...
Tiểu dự án: ...
thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".
Nội dung làm việc:

- Phổ biến thông tin của dự án;
- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:
Đại diện UBND xã:
1. Họ và tên: Nguyễn Thanh Tú ... Chức vụ: phó chủ tịch xã
2. Họ và tên ... Chức vụ: ...

Đại diện các tổ chức chính trị xã hội
1. Mặt trận tổ quốc xã:
Họ và tên: Thạch Thị Kim Sáng ... Chức vụ: phó chủ tịch
2. Đại diện Hội liên hiệp phụ nữ xã:
Họ và tên: Võ Thị Hạnh ... Chức vụ: chủ tịch
3. Đại diện Hội nông dân xã:
Họ và tên: Lê Hồng Hà ... Chức vụ: chủ tịch
4. Đại diện hội cựu chiến binh xã:
Họ và tên: Hồ Sỹ Dương ... Chức vụ: chủ tịch
5. Đại diện Đoàn thanh niên xã:
Họ và tên: Đào Dương Anh Trung ... Chức vụ: bí thư

Đại diện hỗ trợ kỹ thuật huyện ...
1. Họ và tên: ... Chức vụ: ...
2. Họ và tên: ... Chức vụ: ...

Đại diện Ban quản lý dự án tỉnh: ...
1. Họ và tên: ... Chức vụ: ...
2. Họ và tên: ... Chức vụ: ...

Đại diện đơn vị tư vấn:
Họ và tên: ... Chức vụ: ...
Chức vụ: ...

Người dân trong xã tham gia:

Tổng số người tham gia: ...... /......... chiếm ...... % trong tổng số người ảnh hưởng của xã

Trong đó: Nam:............người, chiếm.....%

Nữ:.............người, chiếm.....%

Dân tộc thiểu số:......................% (nếu có)

Đã tiến hành tham vấn về tiểu dự án:..

Chủ toạ cuộc họp:..

Chức vụ:..

Nơi công tác:..

Nội dung làm việc:

Phó chủ tịch xã giới thiệu thành phần tham dự cuộc họp và giới thiệu qua về dự án

Đại diện ban tư vấn chính sách an toàn trình bày nội dung tham vấn

Bà con phát biểu ủng hộ dự án, rất quan tâm về chính sách đền bù

Khu vực dự án đi qua xã phụ thuộc vào đồng lúa, vài năm trở lại tình hình làm ăn phát triển kinh tế bà con khó khăn

Khu vực tiểu dự án không đi qua các công trình nhạy cảm tâm linh của đồng bào

Dự án đã đưa ra, đồng bào có góp ý của người dân:

- Tiết kiệm chi phí và nâng cao chất lượng công trình
- Tạo công ăn việc làm cho phụ nữ và người dân tộc thiểu số
- Góp phần nâng cao đời sống nhân dân

=> Dự án tính hiệu quả

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Cuộc họp kết thúc vào lúc:.....giờ.... ngày 29 tháng..5..năm. 2014

CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã .....Mường Sài..

Đ/D: Cơ quan tư vấn

PHÓ CHỦ TỊCH

Nguyễn Thanh Tú

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

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DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Tiểu dự án: Xây dựng vùng sản xuất nông nghiệp ứng nghệ cao, thành phố -

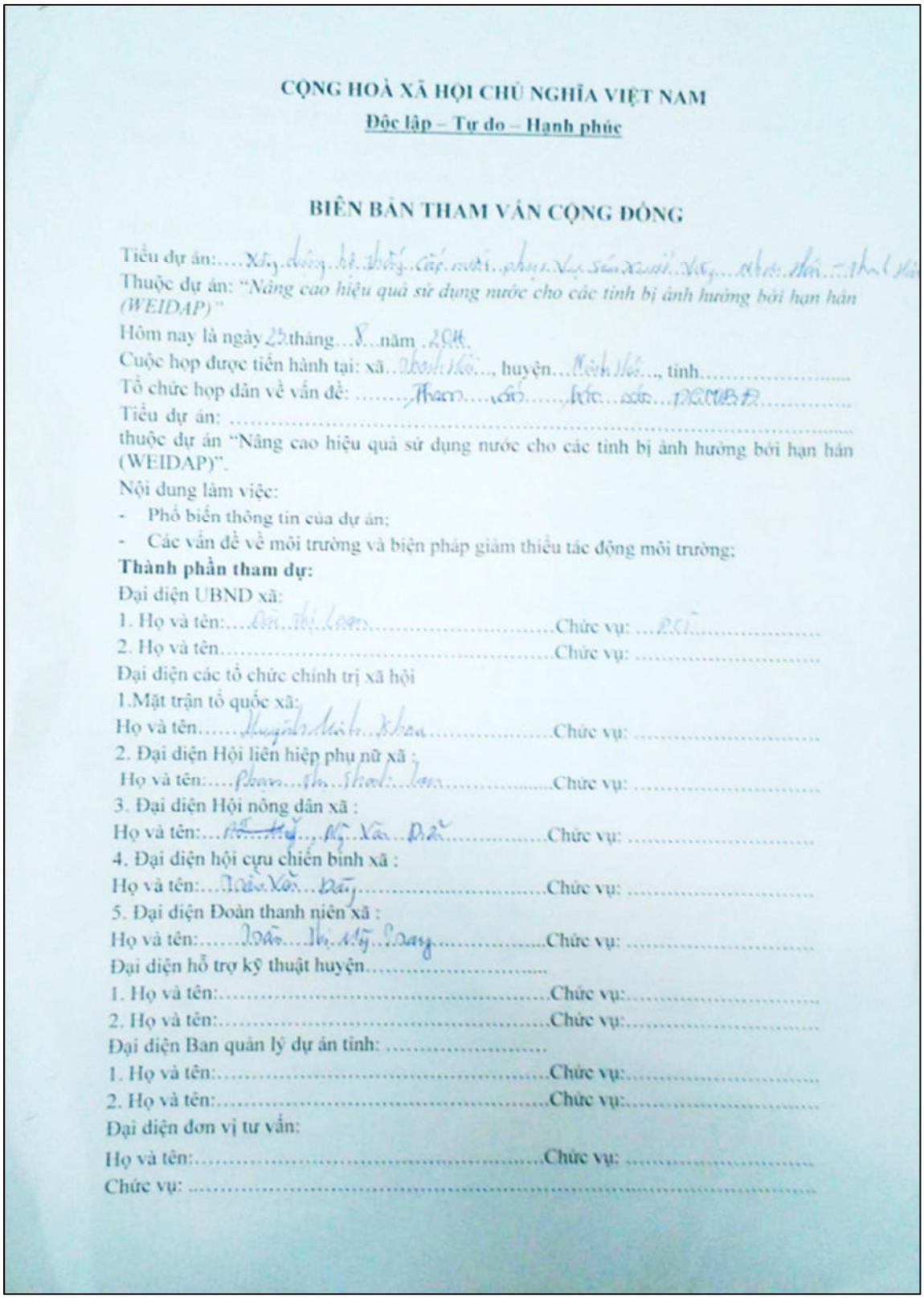
Thuộc dự án: "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán Phiên bản (WEIDAP)"

Địa điểm: xã Nhuận Sơn

Thời gian: ..... giờ ..... ngày 29 tháng 7 năm 2014

TT	Họ và tên	Tuổi	Dân tộc	Giới tính		Chữ ký
				Nam	Nữ	
1	Vũ Thị Hạnh	38	Kinh		x	
2	Đào Đăng Anh Tuấn	24	Châm	x		
3	Thành Thị Kim Sáng	30	Châm		x	
4	Hồ Sỹ Đăng	54	Kinh	x		
5	Nguyễn Thanh Tú	36	Kinh	x		
6	Cao Kim Dinh	43	Kinh		x	
7	Đào Văn Cu	64	Châm	x		
8	Đào Văn Phái	62	Châm	x		
9	Thành Toái	59	Châm	x		
10	Thành Tài	56	Châm	x		
11	Đào Thanh Nhã	38	Châm	x		
12	Đào Văn Hồng		Châm	x		
13	Hứa Tài Biểu					
14	Cầu Văn Chat					

C. Thanh Hai Commune



CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

Tiểu dự án:.....

Thuộc dự án: "*Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)*"

Hôm nay là ngày 25 tháng 8 năm 2011.

Cuộc họp được tiến hành tại: xã Thanh Hải, huyện Thanh Hà, tỉnh.....

Tổ chức họp dân về vấn đề: Thăm dò ý kiến người dân.....

Tiểu dự án: .....

thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".

Nội dung làm việc:

- Phổ biến thông tin của dự án;
- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:

Đại diện UBND xã:

1. Họ và tên: Đào Thị Loan.....Chức vụ: PCT.....
2. Họ và tên.....Chức vụ: .....

Đại diện các tổ chức chính trị xã hội

1.Mặt trận tổ quốc xã:

Họ và tên: Nguyễn Minh Khoa.....Chức vụ: .....

2. Đại diện Hội liên hiệp phụ nữ xã :

Họ và tên: Phạm Thị Thanh Loan.....Chức vụ: .....

3. Đại diện Hội nông dân xã :

Họ và tên: Vũ Thị Xuân Dậu.....Chức vụ: .....

4. Đại diện hội cựu chiến binh xã :

Họ và tên: Trần Văn Dũng.....Chức vụ: .....

5. Đại diện Đoàn thanh niên xã :

Họ và tên: Đào Thị Mỹ Loan.....Chức vụ: .....

Đại diện hỗ trợ kỹ thuật huyện.....

1. Họ và tên:.....Chức vụ:.....
2. Họ và tên:.....Chức vụ:.....

Đại diện Ban quản lý dự án tỉnh: .....

1. Họ và tên:.....Chức vụ:.....
2. Họ và tên:.....Chức vụ:.....

Đại diện đơn vị tư vấn:

Họ và tên:.....Chức vụ: .....

Chức vụ: .....

Người dân trong xã tham gia:

Tổng số người tham gia: ..... /........ chiếm ..... % trong tổng số người ảnh hưởng của xã

Trong đó: Nam:..........người, chiếm.....%

Nữ:..........người, chiếm.....%

Dân tộc thiểu số:....................% (nếu có)

Đã tiến hành tham vấn về tiểu dự án:..

Chủ toạ cuộc họp:..

Chức vụ:..

Nơi công tác:..

Nội dung làm việc:

Đại diện [illegible] giới thiệu về dự án và xin ý kiến bà con về dự án.

Bà con rất [illegible] dự án. Kiến nghị [illegible] đất [illegible] cho người dân.

Hiện nay dự án [illegible] Trần Văn [illegible]

Đề nghị chính quyền [illegible] giải quyết [illegible] Mỹ Phong.

Ông Trần Văn Hùng: bà con rất [illegible]

Dự án góp phần nâng cao đời sống [illegible] cuộc sống của người dân

Thúc đẩy phát triển KT XH, [illegible] trong vùng

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Cuộc họp kết thúc vào lúc:.....giờ.... ngày 23 tháng 8 năm 2021.

CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã ...Thob...Kot..... **Đ/D: Cơ quan tư vấn**

PHÓ CHỦ TỊCH

Đào Thị Loan

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

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DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Tiểu dự án: ..Xây dựng hệ thống cấp nước phục vụ sản xuất vùng Nhơn Hải - Thanh Hải

Thuộc dự án: *"Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"*

Địa điểm: ..Xã Thanh Hải..........

Thời gian: ...... giờ......, ngày 23 tháng ...8..năm ..2011.

TT	Họ và tên	Tuổi	Dân tộc	Giới tính		Chữ ký
				Nam	Nữ	
01	Trần Thị Dung	53	Kinh	Nam		[illegible]
02	Võ Thắng	45	"	"		[illegible]
03	Phan Siêng	53	"	"		[illegible]
4	Phạm Thị Lan	31	"		Nữ.	[illegible]
5	Lê Kiệt	70	"	"		[illegible]
6	Nguyễn Văn Diễn	55	"	"		[illegible]
7	Trần Văn Hùng	61	"	"	Nam	[illegible]
8	Phạm Thành Phước	45	"	"	Nam	[illegible]
9	Phạm Văn Bình	52	"	"	Nam	[illegible]
10	Nguyễn Nhơn	55	"	"		[illegible]
11	Nguyễn Hữu Hạnh	54	"	"	Nam	[illegible]
12	Nguyễn Chẩm	46	"	"	Nam	[illegible]
12	Lô Dẫu	57	"	"		[illegible]
13	Nguyễn Thị Thanh Kim	33	"		Nữ	[illegible]
14	Nguyễn Văn Lâu	60	"	"	Nam	[illegible]
15	Võ Tấn Phúc	29	"	"		[illegible]
16	Đào Thị Loan	33	"		"	[illegible]
17	Ngô Xuân Dũng					[illegible]
18	Lô Văn Dốc	60	Kinh	Nam		[illegible]
19	Trần Thị Mỹ Trang	31	Kinh		"	[illegible]
20	Trần Thị Hoài Thương	27	Kinh	Nữ	"	[illegible]

D. Bac Phong Commune

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

Tiểu dự án:...Xây dựng vùng sản xuất nông nghiệp công nghệ cao [illegible]
Thuộc dự án: "*Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)*"
Hôm nay là ngày 25 tháng...8...năm 2016
Cuộc họp được tiến hành tại: xã..Bắc Phong... huyện...Thuận Bắc tỉnh.........................
Tổ chức họp dân về vấn đề: .....[illegible]..............
Tiểu dự án: ....
thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".
Nội dung làm việc:

- Phổ biến thông tin của dự án;
- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:

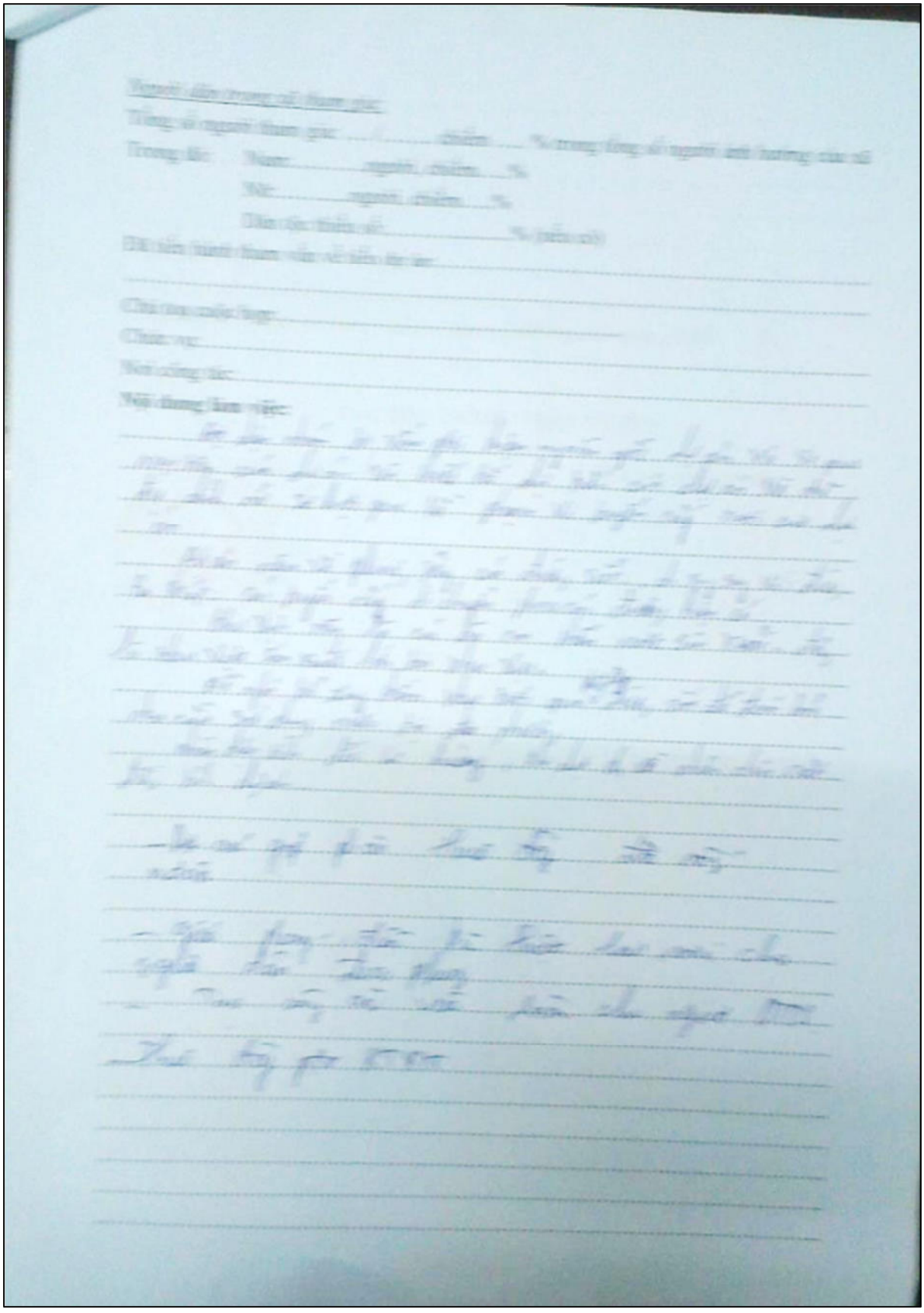
Đại diện UBND xã:
1. Họ và tên:...Nguyễn Văn [illegible]......................Chức vụ: ....
2. Họ và tên...Chức vụ: ....

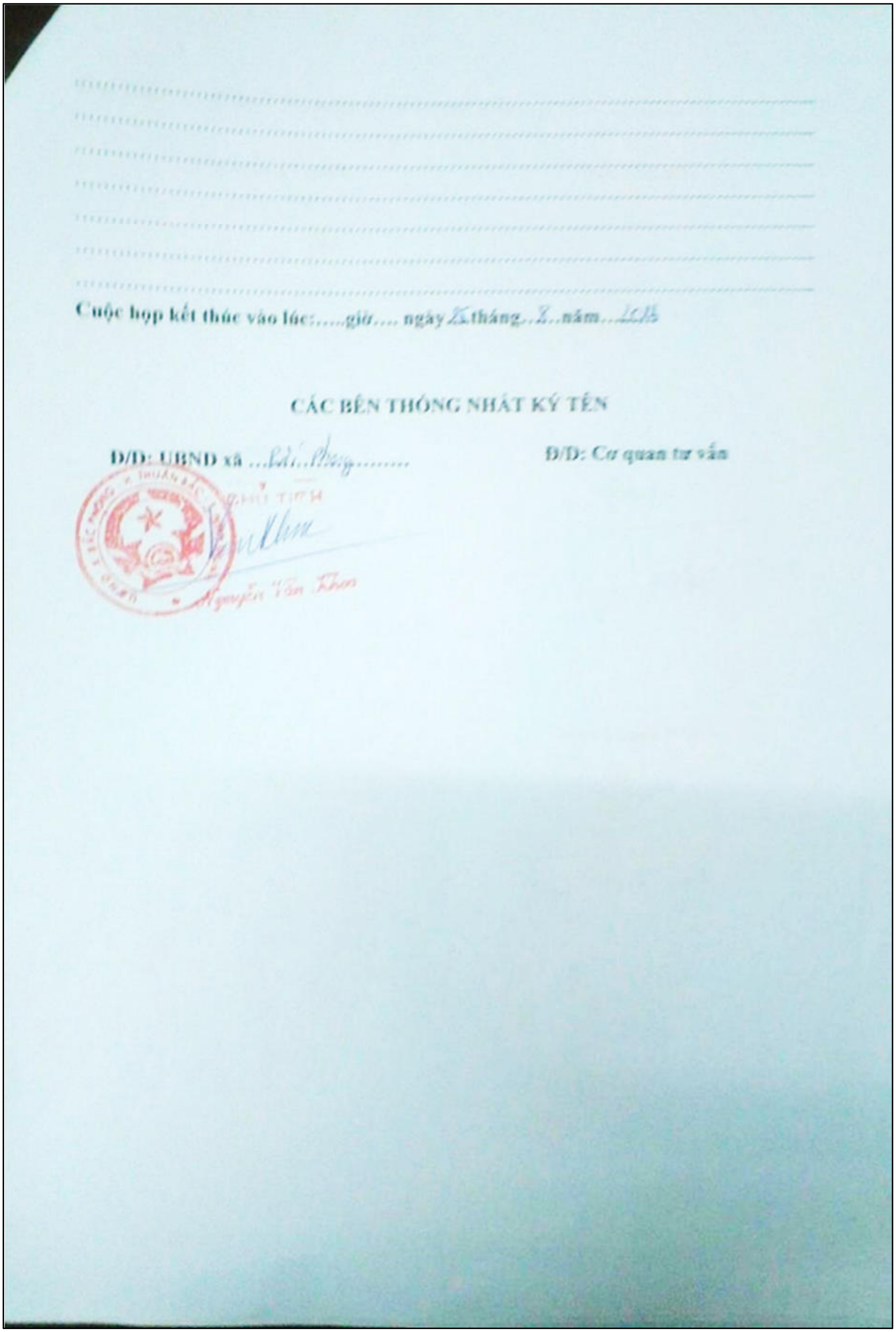
Đại diện các tổ chức chính trị xã hội
1.Mặt trận tổ quốc xã:
Họ và tên.....Lê Thị [illegible]................................Chức vụ: ....P.C.T.................
2. Đại diện Hội liên hiệp phụ nữ xã :
Họ và tên:....[illegible]........................Chức vụ: ..[illegible]......................
3. Đại diện Hội nông dân xã :
Họ và tên:..Chức vụ: ....
4. Đại diện hội cựu chiến binh xã :
Họ và tên:......Nguyễn Văn Minh [illegible]............Chức vụ: .....P.C.T..................
5. Đại diện Đoàn thanh niên xã :
Họ và tên:.......[illegible] Văn Tuấn..............Chức vụ: .....bí thư xã đoàn

Đại diện hỗ trợ kỹ thuật huyện..........................
1. Họ và tên:..Chức vụ:..........................
2. Họ và tên:..Chức vụ:..........................

Đại diện Ban quản lý dự án tỉnh: ....
1. Họ và tên:..Chức vụ:..........................
2. Họ và tên:..Chức vụ:..........................

Đại diện đơn vị tư vấn:
Họ và tên:..Chức vụ: ....
Chức vụ: ....





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Cuộc họp kết thúc vào lúc:.....giờ.... ngày [illegible] tháng [illegible] năm [illegible]

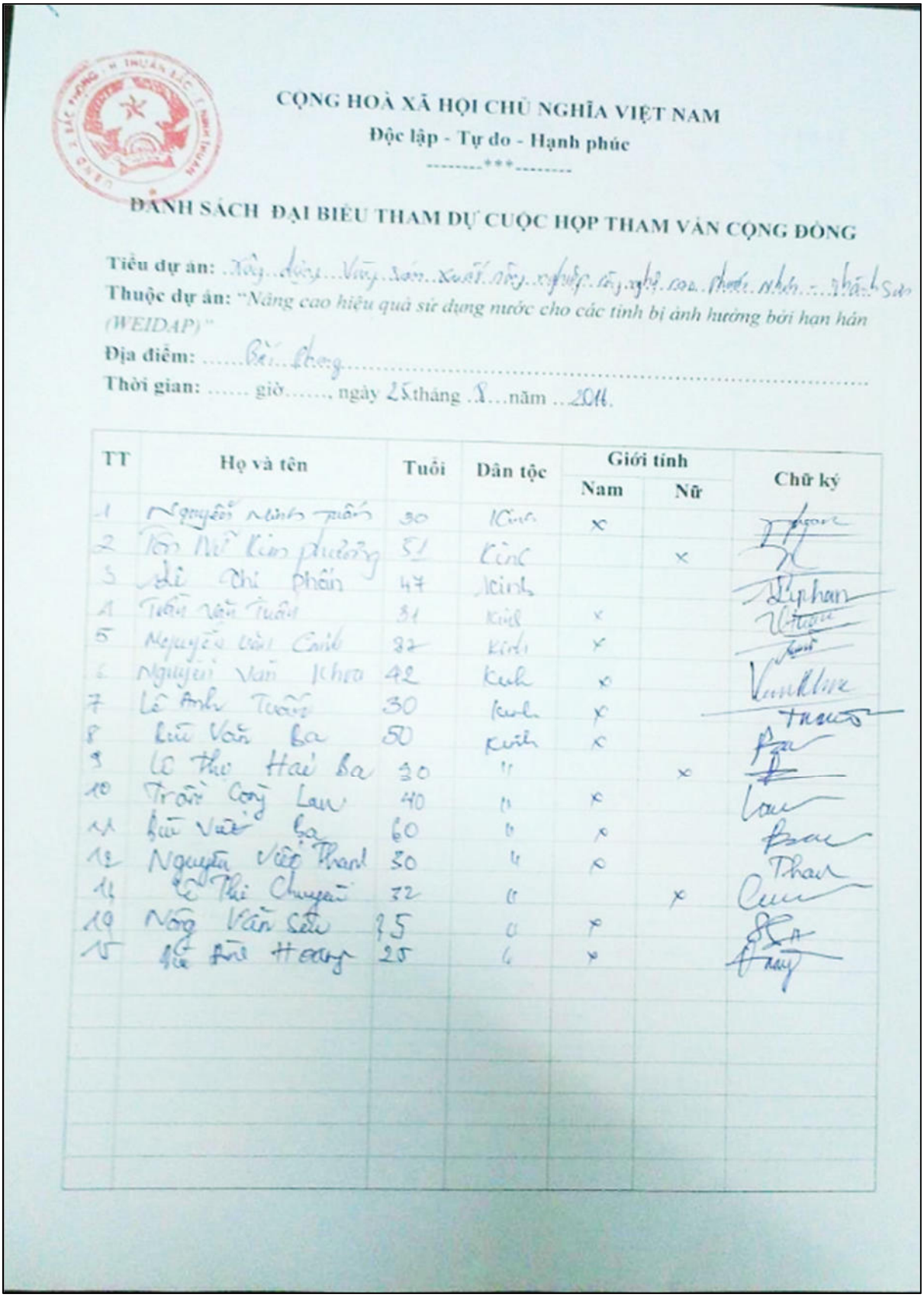
CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã ...[illegible]........

Đ/D: Cơ quan tư vấn

CHỦ TỊCH

Nguyễn Văn Khon



CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

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DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Tiểu dự án: ..Nâng..cao..năng..suất..nông..nghiệp..và..nghề..cá..thích..nghi..với..hạn..hán..

Thuộc dự án: "*Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)*"

Địa điểm: .....Bến..Tre.....

Thời gian: ..... giờ....., ngày 25 tháng 8...năm ..2011.

TT	Họ và tên	Tuổi	Dân tộc	Giới tính		Chữ ký
				Nam	Nữ	
1	Nguyễn Minh Tuấn	30	Kinh	x		
2	Võ Thị Kim Phương	51	Kinh		x	
3	Lê Thị Phấn	47	Kinh			
4	Trần Văn Tuấn	31	Kinh	x		
5	Nguyễn Văn Cảnh	32	Kinh	x		
6	Nguyễn Văn Khoa	42	Kinh	x		
7	Lê Anh Tuấn	30	Kinh	x		
8	Lưu Văn Ba	50	Kinh	x		
9	Lê Thị Hải Ba	30	"		x	
10	Trần Công Lao	40	"	x		
11	Lưu Văn Ba	60	"	x		
12	Nguyễn Việt Thanh	30	"	x		
13	Lê Thị Chuyên	32	"		x	
14	Nông Văn Sâu	45	"	x		
15	Lê Thị Hoàng	25	"	x		

E. Xuan Hai Commune

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

Tiểu dự án: Xây dựng vùng sản xuất nông nghiệp sử dụng nước cao [illegible]

Thuộc dự án: "*Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)*"

Hôm nay là ngày 2 tháng 8 năm 2014

Cuộc họp được tiến hành tại: xã Xuân Hải, huyện Ninh Hải, tỉnh Ninh Thuận

Tổ chức họp dân về vấn đề: Tham vấn báo cáo [illegible]

Tiểu dự án: ....

thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".

Nội dung làm việc:

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- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:

Đại diện UBND xã:

1. Họ và tên: .... Chức vụ: ....
2. Họ và tên: Nguyễn Đức Thi .... Chức vụ: phó chủ tịch

Đại diện các tổ chức chính trị xã hội

1.Mặt trận tổ quốc xã:

Họ và tên: Thành Văn Dũng .... Chức vụ: chủ tịch

2. Đại diện Hội liên hiệp phụ nữ xã :

Họ và tên: .... Chức vụ: ....

3. Đại diện Hội nông dân xã :

Họ và tên: Võ Thành Lân .... Chức vụ: chủ tịch

4. Đại diện hội cựu chiến binh xã :

Họ và tên: .... Chức vụ: ....

5. Đại diện Đoàn thanh niên xã :

Họ và tên: .... Chức vụ: ....

Đại diện hỗ trợ kỹ thuật huyện..........

1. Họ và tên: .... Chức vụ: ....
2. Họ và tên: .... Chức vụ: ....

Đại diện Ban quản lý dự án tỉnh: ....

1. Họ và tên: .... Chức vụ: ....
2. Họ và tên: .... Chức vụ: ....

Đại diện đơn vị tư vấn:

Họ và tên: .... Chức vụ: ....

Chức vụ: ....

Người dân trong xã tham gia:

Tổng số người tham gia: …. /…….. chiếm ….. % trong tổng số người ảnh hưởng của xã

Trong đó: Nam:……..người, chiếm…..%

Nữ:…….....người, chiếm…..%

Dân tộc thiểu số:…….....% (nếu có)

Đã tiến hành tham vấn về tiểu dự án:……

……

Chủ toạ cuộc họp:……

Chức vụ:……

Nơi công tác:……

Nội dung làm việc:

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Cuộc họp kết thúc vào lúc:.....giờ.... ngày 21 tháng 8 năm 2021.

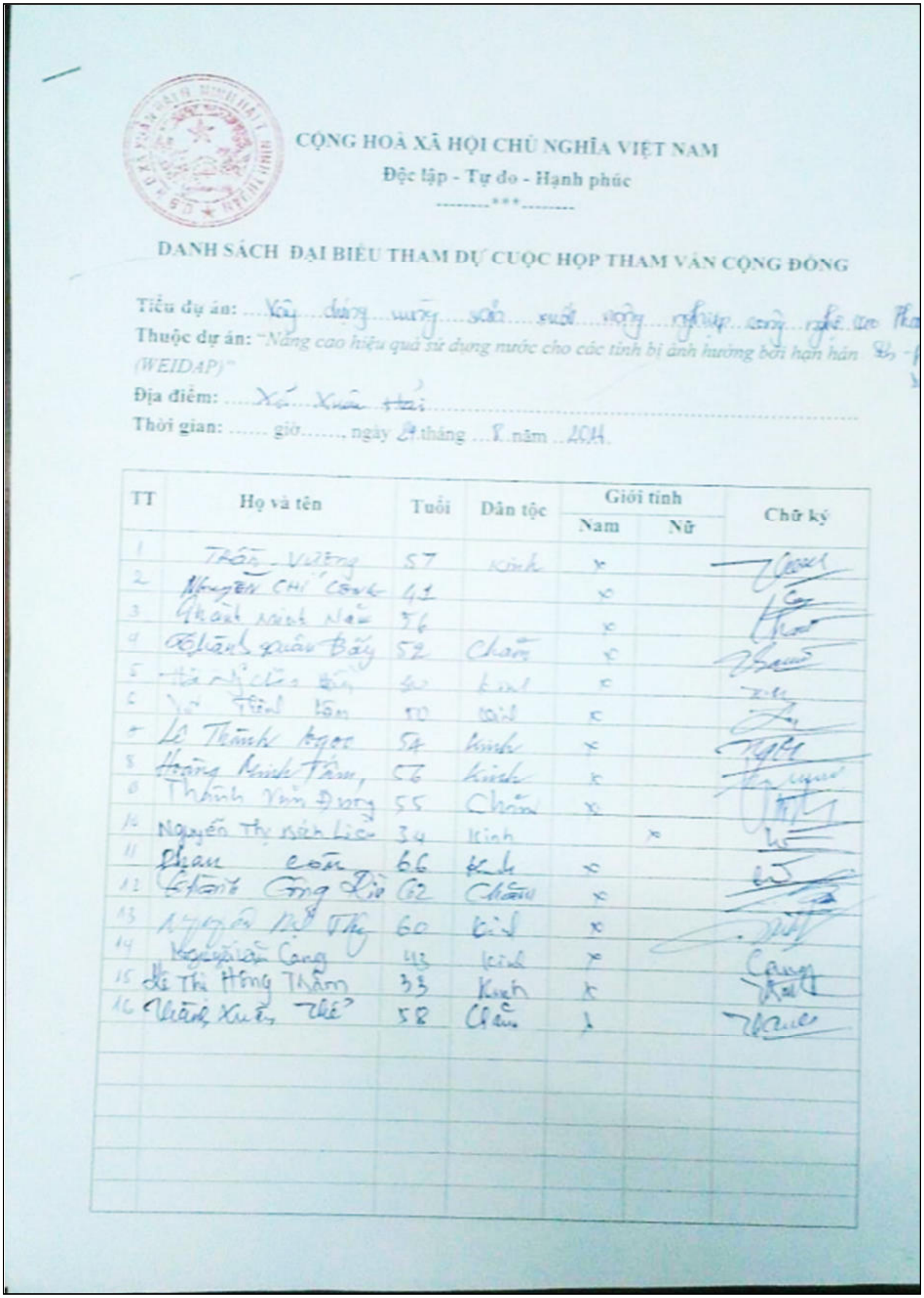
CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã Xuân Hải

KT. CHỦ TỊCH
PHÓ CHỦ TỊCH

Nguyễn Đình Thi

Đ/D: Cơ quan tư vấn



CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

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DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Tiểu dự án: [illegible]

Thuộc dự án: "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"

Địa điểm: Xã Xuân Hải

Thời gian: ...... giờ....... ngày 29 tháng 8 năm 2014

TT	Họ và tên	Tuổi	Dân tộc	Giới tính		Chữ ký
				Nam	Nữ	
1	Trần Vương	57	Kinh	x		[illegible]
2	Nguyễn Chí Công	41		x		[illegible]
3	Thành Minh Nam	56		x		[illegible]
4	Thành Xuân Bảy	52	Chăm	x		[illegible]
5	[illegible]	40	Kinh	x		[illegible]
6	Võ Tiến Tâm	50	Kinh	x		[illegible]
7	Lê Thành Ngọc	54	Kinh	x		[illegible]
8	Hoàng Minh Tâm	56	Kinh	x		[illegible]
9	Thành Văn Dương	55	Chăm	x		[illegible]
10	Nguyễn Thị Kim Liên	34	Kinh		x	[illegible]
11	Phan Cần	66	Kinh	x		[illegible]
12	Thành Công Đào	62	Chăm	x		[illegible]
13	Nguyễn Bá Thọ	60	Kinh	x		[illegible]
14	Nguyễn Văn Cang	43	Kinh	x		[illegible]
15	Lê Thị Hồng Thắm	33	Kinh	x		[illegible]
16	Thành Xuân Thể	58	Chăm	x		[illegible]

F. Nhon Hai Commune

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

Tiểu dự án: [illegible]

Thuộc dự án: *"Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"*

Hôm nay là ngày 23 tháng 8 năm 2016

Cuộc họp được tiến hành tại: xã Nhơn Hải, huyện [illegible], tỉnh……………………

Tổ chức họp dân về vấn đề: [illegible]

Tiểu dự án: [illegible] thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".

Nội dung làm việc:

- Phổ biến thông tin của dự án;
- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:

Đại diện UBND xã:

1. Họ và tên: [illegible] Chức vụ: P.CT
2. Họ và tên: [illegible] Chức vụ: [illegible]

Đại diện các tổ chức chính trị xã hội

1.Mặt trận tổ quốc xã:

Họ và tên: [illegible] Chức vụ: [illegible]

2. Đại diện Hội liên hiệp phụ nữ xã :

Họ và tên: [illegible] Chức vụ: [illegible]

3. Đại diện Hội nông dân xã :

Họ và tên: [illegible] Chức vụ: P.CT

4. Đại diện hội cựu chiến binh xã :

Họ và tên: [illegible] Chức vụ: [illegible]

5. Đại diện Đoàn thanh niên xã :

Họ và tên: [illegible] Chức vụ: [illegible]

Đại diện hỗ trợ kỹ thuật huyện……………………

1. Họ và tên:……………………Chức vụ:……………………
2. Họ và tên:……………………Chức vụ:……………………

Đại diện Ban quản lý dự án tỉnh: ……………………

1. Họ và tên:……………………Chức vụ:……………………
2. Họ và tên:……………………Chức vụ:……………………

Đại diện đơn vị tư vấn:

Họ và tên:……………………Chức vụ: ……………………

Chức vụ: ……………………

Người dân trong xã tham gia:

Tổng số người tham gia: .... / .... chiếm ..... % trong tổng số người ảnh hưởng của xã

Trong đó: Nam:...........người, chiếm.....%

Nữ:............người, chiếm.....%

Dân tộc thiểu số:.....................% (nếu có)

Đã tiến hành tham vấn về tiểu dự án:..

....

Chủ toạ cuộc họp:...

Chức vụ:..

Nơi công tác:..

Nội dung làm việc:

Đời sống văn hóa về môi trường tại địa phương, nhìn chung ổn định, ít có [illegible], [illegible] xảy ra nhiều lần.

Nước sinh hoạt của nhân dân sử dụng là nước máy.

[illegible] của dân với dự án của bà địa phương, mong muốn nhận được sự đồng ý của bà địa phương.

Bà con nhất trí với dự án.

Với đề nghị như bà con ~~[illegible]~~ sẽ bàn sau những chủ trương đồng ý với dự án.

Khi có về [illegible] bà con có đất sản xuất [illegible] xây ra khi dự án đi qua, bà con sản xuất [illegible] phương án chia bồi đền bù. Nếu ảnh hưởng nhiều vì diện tích sẽ ảnh hưởng đến khả năng sản xuất của nhân dân.

Có thể gây bụi, ảnh hưởng đến môi trường, trong quá trình xây dựng, về mặt môi trường, [illegible], đường xá nếu có hư hỏng đề nghị khắc phục lại.

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Cuộc họp kết thúc vào lúc:.....giờ.... ngày....tháng.....năm.....

CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã .....

PHÓ CHỦ TỊCH

Nguyễn Văn Sâm

Đ/D: Cơ quan tư vấn

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

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DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Tiểu dự án: ..Xây dựng hệ thống cấp nước phục vụ sản xuất Nông nghiệp Nhơn Hải - Thanh Hải

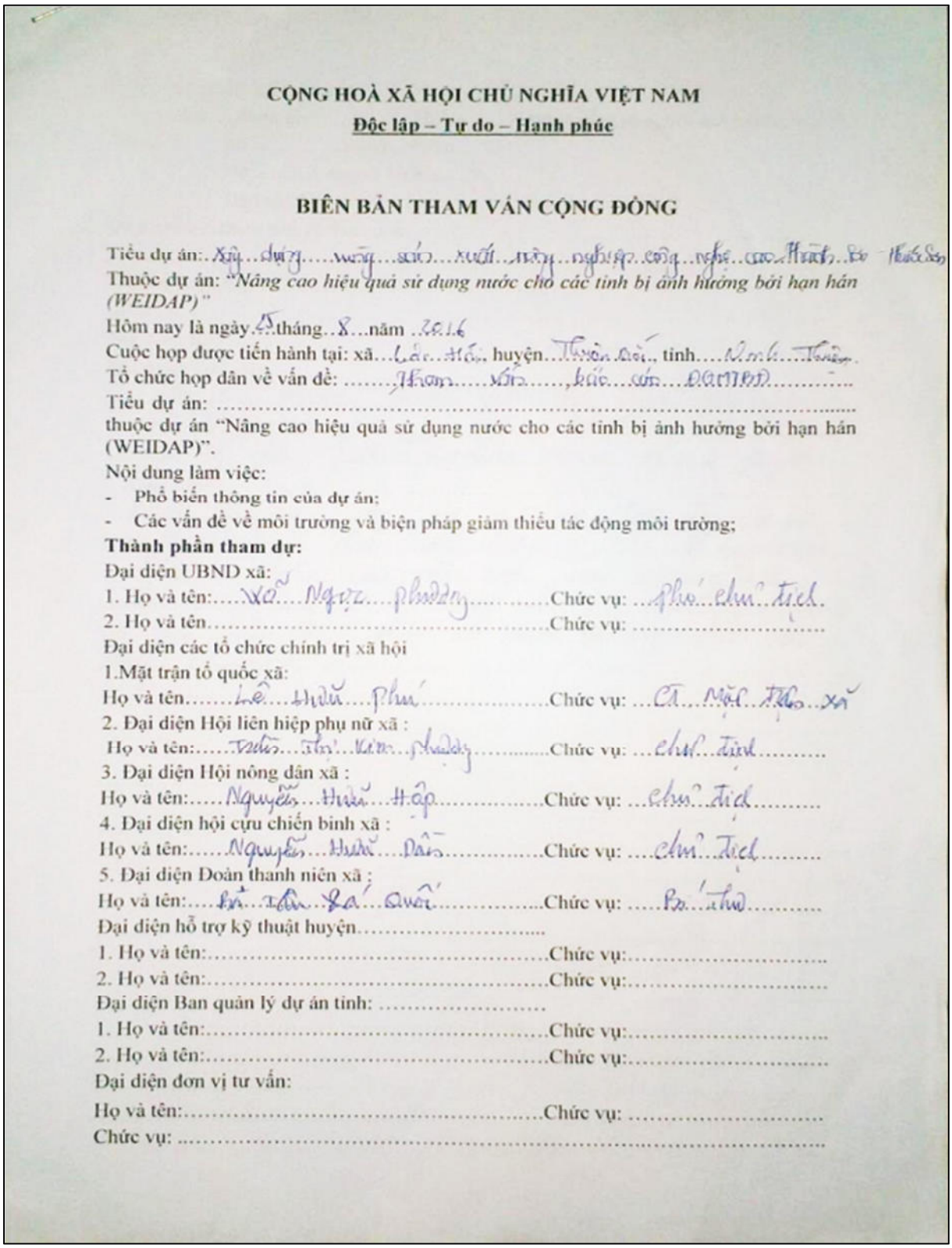
Thuộc dự án: *"Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"*

Địa điểm: ..xã Nhơn Hải.....

Thời gian: ..... giờ....., ngày 23..tháng ..8...năm ...2016

TT	Họ và tên	Tuổi	Dân tộc	Giới tính		Chữ ký
				Nam	Nữ	
1	Trần Văn Trích	31	Kinh			
2	Nguyễn Văn Tám	36	"			
3	Ng Thanh Hảo					
4	Nguyễn Thanh Vinh	42	Kinh	x		
5	Trần Quang Quyền	32	Kinh	x		
6	Nguyễn Thị Kim Nhung	30	Kinh		x	
7	Phan Thanh Sử	30	Kinh	x		
8	Võ Thị Hạnh	10	"			
9	Bùi Thế Lan	50	"			
10	Trần Thị Nga	31	"			
11	Nguyễn Thái Lend	32	"			
12	Lê Thị Ái	38	"			
13	Lê Văn Liêu	45	Kinh	x		
14	Nguyễn Thị Đào	40	"		x	
15	Trần Văn Quyết	46				

G. Loi Hai Commune



CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

Tiểu dự án:.....

Thuộc dự án: *"Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"*

Hôm nay là ngày 15 tháng 8 năm 2016

Cuộc họp được tiến hành tại: xã Lộc Hiệp huyện Phước Long tỉnh Bình Phước

Tổ chức họp dân về vấn đề: Tham vấn, khảo sát DAWRM

Tiểu dự án: .....

thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".

Nội dung làm việc:

- Phổ biến thông tin của dự án;
- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:

Đại diện UBND xã:

1. Họ và tên: Vũ Ngọc Phương Chức vụ: Phó chủ tịch
2. Họ và tên..... Chức vụ: .....

Đại diện các tổ chức chính trị xã hội

1.Mặt trận tổ quốc xã:

Họ và tên: Lê Thanh Phú Chức vụ: Cán bộ MTTQ xã

2. Đại diện Hội liên hiệp phụ nữ xã :

Họ và tên: Trần Thị Kim Thuỷ Chức vụ: chủ tịch

3. Đại diện Hội nông dân xã :

Họ và tên: Nguyễn Thanh Hiệp Chức vụ: chủ tịch

4. Đại diện hội cựu chiến binh xã :

Họ và tên: Nguyễn Thanh Dân Chức vụ: chủ tịch

5. Đại diện Đoàn thanh niên xã :

Họ và tên: Lê Thanh Quí Chức vụ: Bí thư

Đại diện hỗ trợ kỹ thuật huyện.....

1. Họ và tên:..... Chức vụ:.....
2. Họ và tên:..... Chức vụ:.....

Đại diện Ban quản lý dự án tỉnh: .....

1. Họ và tên:..... Chức vụ:.....
2. Họ và tên:..... Chức vụ:.....

Đại diện đơn vị tư vấn:

Họ và tên:..... Chức vụ: .....

Chức vụ: .....

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Cuộc họp kết thúc vào lúc:.....giờ..... ngày.....tháng.....năm.....

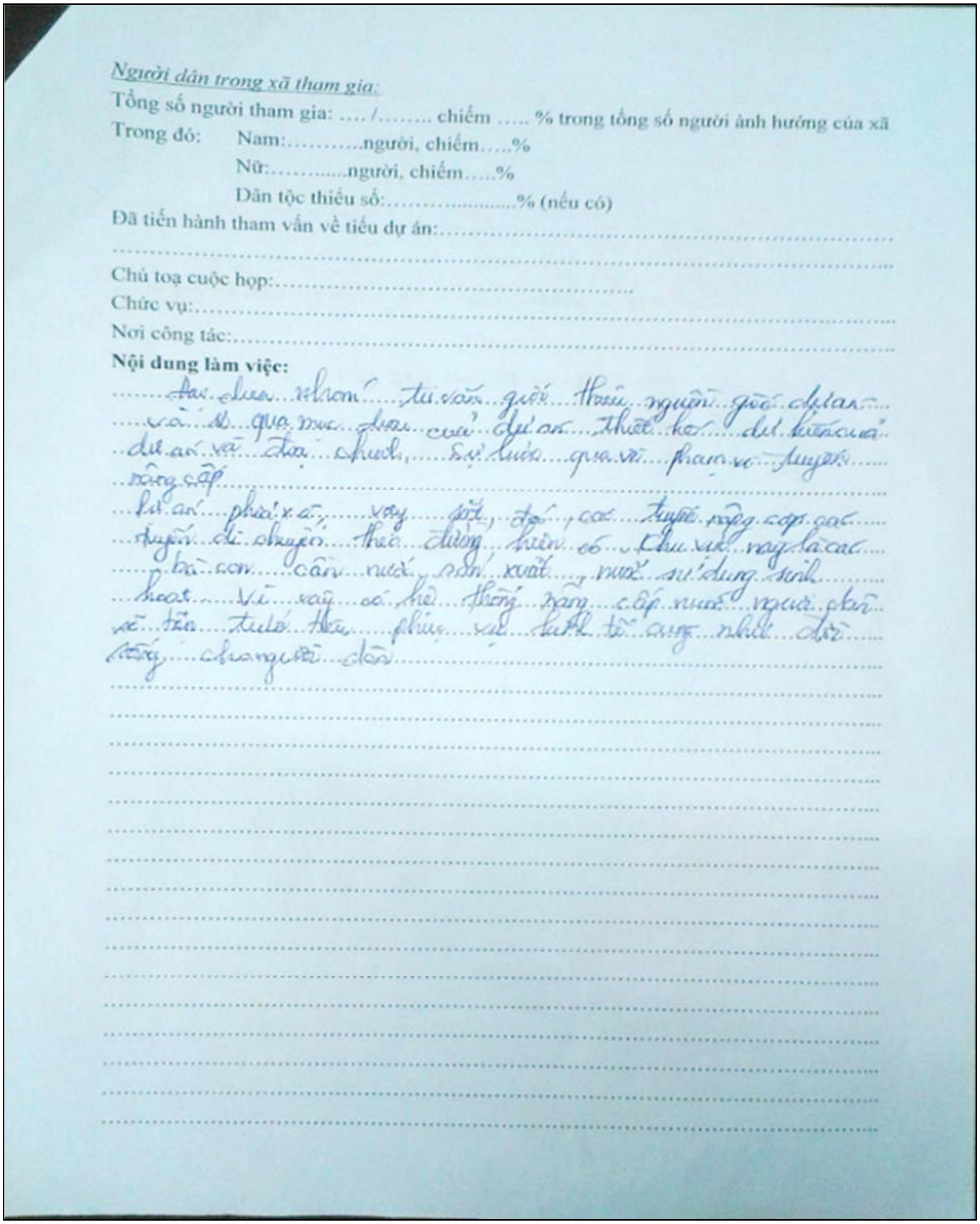
CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã .....

Đ/D: Cơ quan tư vấn

KT. CHỦ TỊCH
PHÓ CHỦ TỊCH

Võ Ngọc Phương



Người dân trong xã tham gia:

Tổng số người tham gia: …. /…….. chiếm ….. % trong tổng số người ảnh hưởng của xã

Trong đó: Nam:……….người, chiếm…..%

Nữ:………..người, chiếm…..%

Dân tộc thiểu số:………………..% (nếu có)

Đã tiến hành tham vấn về tiểu dự án:……………………………………………………

……………………………………………………………………………………………

Chủ toạ cuộc họp:…………………………………………

Chức vụ:……………………………………………………………………………………

Nơi công tác:………………………………………………………………………………

Nội dung làm việc:

Đại diện nhóm tư vấn giới thiệu nguồn gốc dự án và sơ qua mục đích của dự án. Thiết kế dự kiến của dự án và địa chính, sự liên quan với phạm vi tuyến nâng cấp.

Dự án phải xây sửa, đổi, các tuyến nâng cấp các tuyến di chuyển theo đường hiện có. Khu vực này là các bà con cần nước sản xuất, nước sử dụng sinh hoạt. Vì vậy có hệ thống nâng cấp nước người dân sẽ tận tình hơn phục vụ tưới tiêu cũng như đời sống cho người dân

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

DANH SÁCH ĐẠI BIỂU THAM DỰ CUỘC HỌP THAM VẤN CỘNG ĐỒNG

Tiểu dự án: Xây dựng mô hình nuôi trồng nghiệp công nghệ cao thích ứng

Thuộc dự án: "*Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán*" (WEIDAP)"

Địa điểm: Xã Liên Hải - Huyện Thuận Bắc - Tỉnh Ninh Thuận

Thời gian: ..... giờ ..... ngày 15 tháng 8 năm 2021

TT	Họ và tên	Tuổi	Dân tộc	Giới tính		Chữ ký
				Nam	Nữ	
1	Đinh Văn Thuận	1970	Kinh	x		
2	Lê Thị Mai	1988	Kinh		x	
3	Tà Xai Hải	1965	Kinh	x		
4	Nguyễn Thị Hai	1990	Kinh		x	
5	Nhữ Thị Thanh	1992	Kinh		x	
6	Nguyễn Văn Hoa	1986	Kinh	x		
7	Trần Thị Mỹ Cam	1993	Ra Glai		x	
8	Đào Thị Thạch	1969	Kinh		x	
9	Nguyễn Hải Đào	1987	Kinh	x	x	
10	Phan Anh Thắng	1971	Kinh	x		
11	Nguyễn Hữu Đạo	49	"	x		
12	Mai Thị Quyên	47	"		x	
13	Bùi Thị Dung	47	"		x	
14	Nguyễn Văn Minh	30	"	x		
15	Lê Văn Thắng	46	"	x		

H. Phuoc Trung Commune

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN THAM VẤN CỘNG ĐỒNG

Tiểu dự án: Xây dựng vùng sản xuất nông nghiệp công nghệ cao Phước ... Thuận ...

Thuộc dự án: *"Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)"*

Hôm nay là ngày 29 tháng 5 năm 2014

Cuộc họp được tiến hành tại: xã Phước Trung, huyện Bác Ái, tỉnh Ninh Thuận

Tổ chức họp dân về vấn đề: Tham vấn báo cáo ESMF

Tiểu dự án: ....

thuộc dự án "Nâng cao hiệu quả sử dụng nước cho các tỉnh bị ảnh hưởng bởi hạn hán (WEIDAP)".

Nội dung làm việc:

- Phổ biến thông tin của dự án;
- Các vấn đề về môi trường và biện pháp giảm thiểu tác động môi trường;

Thành phần tham dự:

Đại diện UBND xã:

1. Họ và tên: Trần Quý Dương .... Chức vụ: Chủ tịch
2. Họ và tên: Đoa Văn Linh .... Chức vụ: phó Chủ tịch

Đại diện các tổ chức chính trị xã hội

1.Mặt trận tổ quốc xã:

Họ và tên: Pa Tâu Azá Thác .... Chức vụ: phó Chủ tịch

2. Đại diện Hội liên hiệp phụ nữ xã :

Họ và tên: Chamaléa Thị Ánh .... Chức vụ: Chủ tịch

3. Đại diện Hội nông dân xã :

Họ và tên: Katơr Hoàng .... Chức vụ: Chủ tịch

4. Đại diện hội cựu chiến binh xã :

Họ và tên: Chamaléa Quý .... Chức vụ: phó Chủ tịch

5. Đại diện Đoàn thanh niên xã :

Họ và tên: Chamaléa Phe .... Chức vụ: phó Chủ tịch

Đại diện hỗ trợ kỹ thuật huyện..........................

1. Họ và tên:................................ Chức vụ:..........................
2. Họ và tên:................................ Chức vụ:..........................

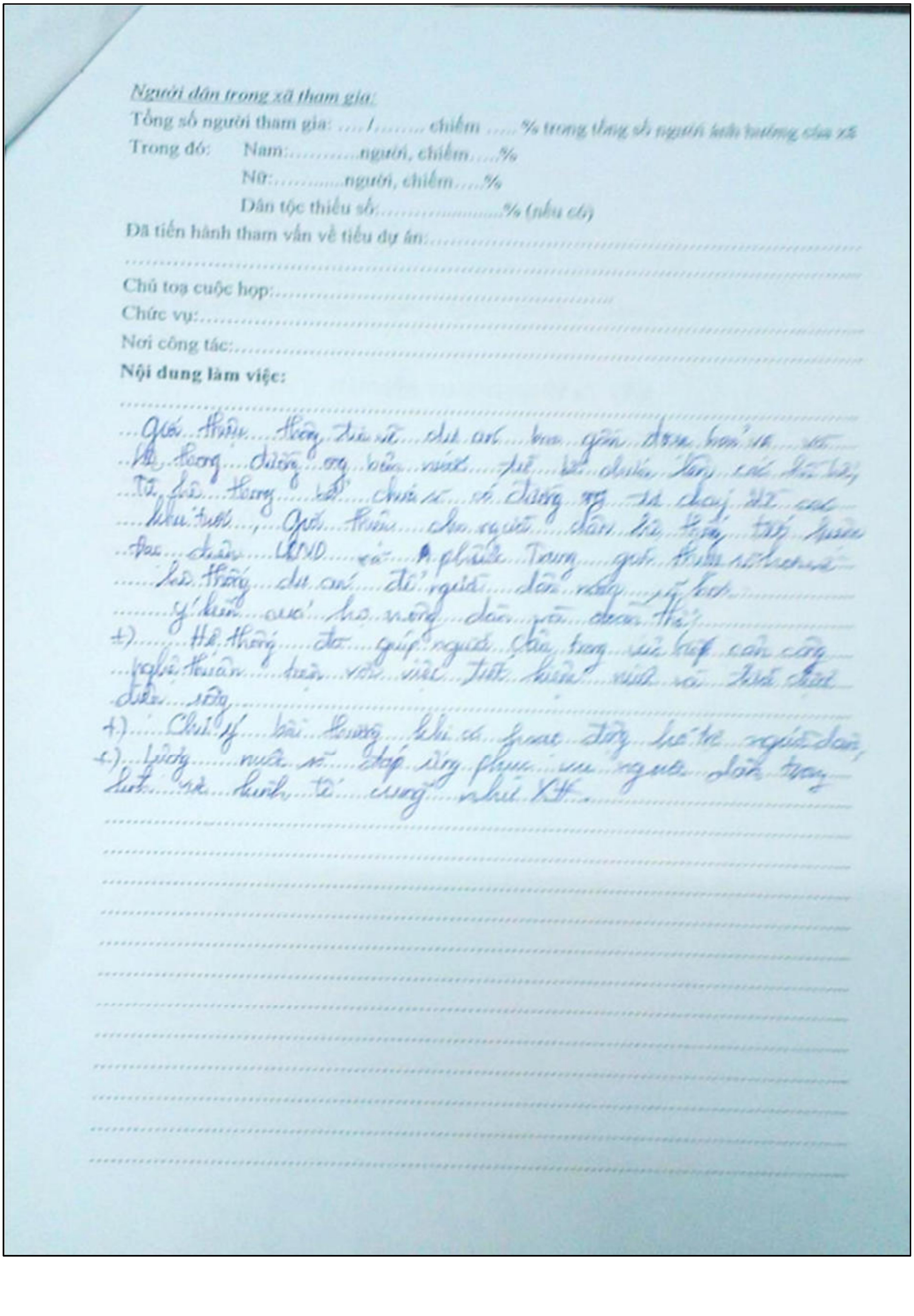
Đại diện Ban quản lý dự án tỉnh: ....

1. Họ và tên:................................ Chức vụ:..........................
2. Họ và tên:................................ Chức vụ:..........................

Đại diện đơn vị tư vấn:

Họ và tên:................................ Chức vụ: ....

Chức vụ: ....



Người dân trong xã tham gia:

Tổng số người tham gia: ..../........ chiếm .....% trong tổng số người hưởng lợi của xã

Trong đó: Nam:...........người, chiếm.....%

Nữ:...........người, chiếm.....%

Dân tộc thiểu số:...................% (nếu có)

Đã tiến hành tham vấn về tiểu dự án:..

Chủ toạ cuộc họp:..

Chức vụ:..

Nơi công tác:..

Nội dung làm việc:

Giới thiệu thông tin về dự án [illegible]

hệ thống đường ống [illegible]

từ hệ thống [illegible]

[illegible], Giới thiệu cho người dân [illegible]

[illegible] UBND xã [illegible]

hệ thống dự án để người dân [illegible]

ý kiến của hộ nông dân [illegible]

+) Hệ thống [illegible] giúp người dân [illegible]

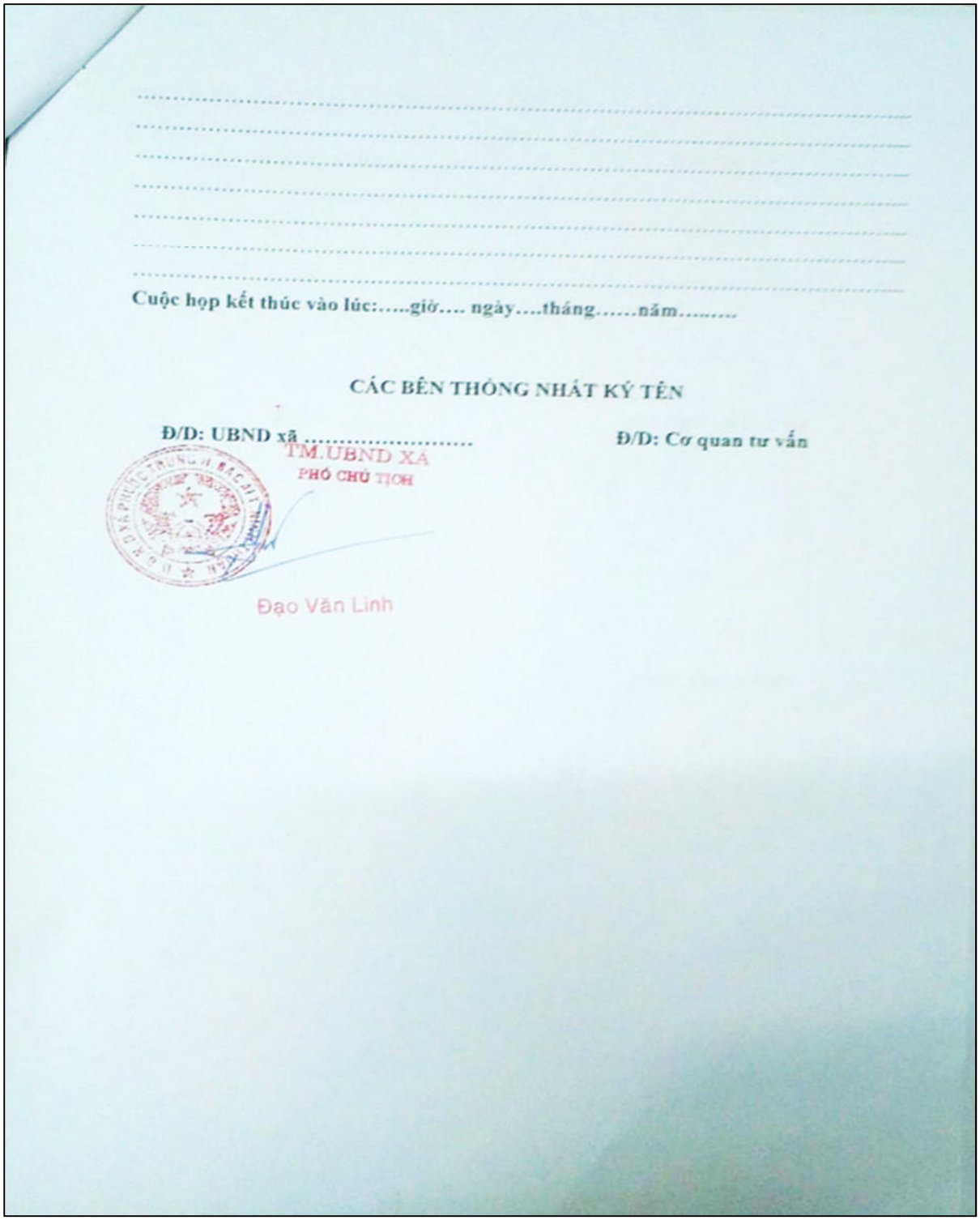
[illegible]

[illegible]

+) Chú ý [illegible] người dân,

+) [illegible] người dân [illegible]

[illegible] như XH.



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Cuộc họp kết thúc vào lúc:.....giờ.... ngày....tháng.....năm.....

CÁC BÊN THỐNG NHẤT KÝ TÊN

Đ/D: UBND xã .....

TM.UBND XÃ
PHÓ CHỦ TỊCH

Đạo Văn Linh

Đ/D: Cơ quan tư vấn