

# Environmental Monitoring Report

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Final Report (Completion Report)  
May 2021

## VIET NAM: Water Sector Investment Program - Tranche 2 Thua Thien Hue Water Supply Subproject

Prepared by Thua Thien Hue Water Supply Joint Stock Company (HueWACO) to Thua Thien Hue Provincial People's Committee and the Asian Development Bank (ADB).

## **CURRENCY EQUIVALENTS**

(As of December 2020)

Currency unit	–	USD (\$)
\$1.00	=	23,250 VND

## **ABBREVIATIONS**

ADB	Asian Development Bank
AH	Affected Household
AP	Affected Person
CARC	Compensation, Assistance and Resettlement Committee
DMS	Detailed Measurement Survey
DOLISA	Department of Labor, Invalids and Social Affairs
EA	Executive Agency
EM	Ethnic Minority
GRM	Grievance Redress Mechanism
HH	Household
LFDC	Land Fund Development Center
LURC	Land Use Right Certificate
NGO	Non-Government Organization
PPC	Provincial People's Committees
RP	Resettlement Plan
SES	Socio-Economic Survey
USD	United State dollar
VND	Vietnam dong

## **NOTE**

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## **I. GENERAL INFORMATION**

### **1. Overview**

1. The Asian Development Bank (ADB) provides financing for the Water Sector Investment Program (Tranche 2) including Thua Thien Hue Water Supply Subproject that will be carried out by Thua Thien Hue Water Supply Joint Stock Company (HueWACO).
2. The objective of the project is (a) increase service coverage areas of WSCs; (b) improve WSCs' business planning, financial management, and asset management; and (c) reduce non-revenue water, through the implementation of prepared sub-projects.
3. Under the Loan Covenant, (dated 23-05-2013 between SOCIALIST REPUBLIC OF VIET NAM and ADB), the Thua Thien Hue Subproject consists of 3 outputs: (i) constructing a WTP approximately 8,000 m<sup>3</sup>/day; (ii) constructing an approximately 40 km transmission pipeline D400-1,200; and (iii) constructing approximately 378 km distribution pipeline D40-355.
4. The subproject had two adjustment. The first adjustment was carried out in 2015, ADB agreed on the following scope of work changes for the subproject by AIDE MEMOIRE on MFF0054 - L2961-VIE: HUE WATER SUPPLY PROJECT LOAN REVIEW MISSION on March 16, 2015: An amount of the loan which was initially earmarked for Phong Dien WTP, the D800 - 1000 Dien Bien Phu — Dong Da transmission pipelines and D500 Hue - Phu Bai pipelines under works and goods contracts, has been reallocated for other transmission and distribution networks in the same project areas of Phong Dien, Tu Ha, Loc An, Loc Bon, and Hue city. Consequently, the total length of the network was increased from 418 km to approximately 700 km and cancelled constructing a WTP under the Thua Thien Hue subproject.
5. The second adjustment was done in 2020. Thua Thien Hue PPC decided to install of ten additional pipelines with total length of 21.4 km with the diameter from D225 to D1200 at three water supply areas namely Phong Dien, Hue city and Loc Bon by Decision No 3025/QD-UBND dated 28/11/2020 on Approval DED and Cost Estimation of ten additional pipelines. As a result, the total length of the network was increased from 700 km to approximately 721.4km.
6. The final output of the sub-project is 721.4km of pipelines, of which:
  - (i) 160.3 km pipelines of D50-D500 for Phong Dien water supply area
  - (ii) 69 km pipelines of D50-D500 for Tu Ha water supply area
  - (iii) 148 km of pipelines of D50-D1200 for water supply area of Hue city and surrounding areas
  - (iv) 235.5 km pipelines of D50-D600 for Loc Bon water supply area
  - (v) 108.3 km pipelines of D50-D400 for Loc An water supply area

7. In terms of social safeguards under ADB's Safeguard Policy Statement (2009 SPS), the Project is categorized B for Environment as defining in PPTA 7089 report. IEE report was prepared under PPTA project in 2011 and it was updated in 2016 which including EMP. After that, EMP was updated in April 2017 to supplement the relevant contents of environmental impact during detailed design, in association with mitigation measures during construction of the Thua Thien Hue subproject.

8. During the construction of the ductile iron and HDPE pipelines of the original scope, HueWACO proposed installation of ten additional pipelines with an additional length of 21.4 km with the diameter from D225 to D1200 at three water supply areas namely Phong Dien, Hue city and Loc Bon. These ten additional items are not included in the approved uEMP in 2017. Therefore, uEMP of Project's Additional Items was prepared and submitted to ADB for approval in November 2019 uEMP of Project's Additional Items was prepared and submitted to ADB for approval in November 2019.

9. The EIA report of the Thua Thien Hue subproject was approved by DoNRE on September 4, 2015 with Decision No. 250/QD-TNMT.

## **2. Objectives of Thua Thien Hue Water Supply Subproject**

10. The objectives of Thua Thien Hue Sub-project are to (i) improve access to water supply and sanitation, particularly the poor people living in the remote, rural areas which are often prone to waterborne diseases, (ii) support social, economic and environmental development, (iii) facilitating employment generation, and raising income levels in the subproject areas: Phong Dien, Tu Ha, Loc An, Loc Bon, and Hue city

## **3. Summary of Construction and Consultant Packages**

11. The Thua Thien Hue Water Supply subproject includes 03 packages HU-CW03, HU-CW05 and HU-CW06. HU-CW05 and HU-CW06 were commencement in April 2018 but HU-CW03 was commencement in July 2018.
12. HU-CW03: The package was commenced on 09/7/2018, date of finish as the contract is 29/10/2019, total construction time is 16 months.
13. HU-CW05: The package was commenced on 24/4/2018, date of finish as the contract is 29/9/2019, total construction time is 17 months
14. HU-CW06: The package was commenced on 12/4/2018, date of finish as the contract is 01/10/2019, total construction time is 18 months.
15. In fact, by the end of the third quarter of 2019, Hue-CW05 and Hue-CW06 packages completed construction while HUE-CW03 package completed construction at the end of October 2019. Three packages were completed works on time as their contract.
16. After ten additional pipelines were approved by Decision No 3025/QD-UBND dated 28/11/2020 on Approval DED and Cost Estimation of ten additional pipelines, its 21.4km of pipelines was divided to two packages HU-CW03 (4km) and HU-CW05 (17.4km) and ten additional pipelines were completed construction during one month in December 2020. Detail of each package is described in Table 1 below:

**Table 1: Packages in Thua Thien Hue Water Supply Subproject**

No.	Items	Project location	Descriptions	Information of the construction contractor
<b>I</b>	<b>Package 01: HUE – CW03</b>			
1	Provide and install a ductile-iron pipeline system and fittings with diameters D225 to D1200	Phong Dien district, Tu Ha district, Hue City	This package provides and installs a ductile iron pipeline system and fittings with diameters from D225 to D1200 with total length is 38.4 m and 22 pipelines, of which 4.3km in Phong Dien, 3.0km in Tu Ha, 31 km in Hue City and surrounding areas . This is included the additional works	Bach Dang Construction Corporation – JSC
<b>II</b>	<b>Package 02: HUE – CW05</b>			
1	Provide and install an HDPE pipeline system and fittings with diameters D50 to D1200 in Phong Dien, Tu Ha, and Hue City	Phong Dien district, Tu Ha district, Hue City	This package provides and installs an HDPE pipeline system and fittings in Phong Dien (156 Km), Tu Ha (66 km), and Hue City (117 km) with 98 pipelines and total length is 339 km. This is included the additional works	Joint Venture of Dai Phu Thinh Company Ltd and Southern Construction Joint Stock Company.
<b>III</b>	<b>Package 03: HU-CW06</b>			
1	Provide and install an HDPE pipeline system and fittings with diameters D50 to D1200 in Loc	Loc An, Loc Bon (Phu Loc, Phu Vang district)	This package provides and installs an HDPE pipeline system and fittings in Loc An (108.3 km) and Loc Bon (235.5 km) with 49 pipelines and total length is 343.8 km	Vietnam Water & Environment Investment Corporation - JSC

No.	Items	Project location	Descriptions	Information of the construction contractor
	An and Loc Bon			

17. Contract Management and Construction Supervision Consultant: On September 9, 2016, Thua Thien Hue Water Supply Joint Stock Company, signed a Consulting Services Contract for Contract Management and Construction Supervision with Joint Venture of Haskoning DHV Nederland B.V (the Netherlands) and Haskoning DHV Vietnam Co., Ltd (CMCS Consultant). The contract was valid for 36 months until September 9<sup>th</sup>, 2019. The contract was extended two times, the first time was until December 31<sup>st</sup> 2019 as NOL of ABD dated September 30<sup>th</sup> 2019 and the second time was until December 31<sup>st</sup>, 2020 as NOL of ABD dated December 14<sup>th</sup> 2020. The NOL letters were added in Annex 2.
18. The consultant assists the PMU in the supervision of construction activities including compliance with environmental safeguards and support the project management.

## **I. ENVIRONMENT SAFEGUARD IMPLEMENTATION**

### **A. Summary of potential environment impact and requested mitigation measures**

#### ***During construction time:***

19. Impacts and requested mitigation measures during construction of the Thua Thien Hue water supply subproject were defined in two EMP reports, including updated EMP in August 2017 of the subproject and EMP for Project's Additional Items in November 2019. Impacts and requested mitigation measures in updated EMP in August 2017 were applied for three packages HU-CW03, HU-CW05 and HU-CW06 since commencement. Impacts and requested mitigation measures in EMP for Project's Additional Items in November 2019 were applied for two packages HU-CW03 and HU-CW05 since commencement additional pipelines because these additional items were divided into those two packages.
20. Most of the environmental impacts during construction identified in the 2 EMP reports were the same, namely the impacts on dust, noise, domestic and construction solid waste, wastewater, excavated soil, transportation and storage of construction materials, landslides, traffic impacts, disruption to public services, Cultural chance finds, work safety and social issues, Particularly, 10 additional pipelines have additional impacts on fisheries in lagoons (Ha Trung Lagoon), impacts on waterway traffic on the Huong river, impacts on agricultural land (in Phu My Commune and Phu An Commune for Additional Pipelines No.7, Phong Binh Commune for Additional Pipeline No.8).

21. Impacts and requested mitigation measures in EMP for Project's Additional Items (10 additional pipelines) were applied for two packages HU-CW03 and HU-CW05 during the construction time in December 2020. Detail of monitoring the implementation and compliance with the requirements in the related EMP for 10 additional pipelines during the reporting period is presented in Table 2 below:



**Table 2 : Compliance with requirements in the EMP for 10 additional pipeline**

Impact	EMP Requirements (Mitigation Measures)	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
(1)	(2)		(3)	(4)
	<b>Hue-CW03 (5 pipelines) and Hue-CW05 (5 pipelines) Packages</b>			
Impact on agricultural land	<p>Avoid excavation and backfilling during rains.</p> <p>Restrict construction during farming season.</p> <p>Periodically and thoroughly remove soils, stones and wastes from drainage sewers and ditches inside and around the construction site.</p> <p>Backfilling the agricultural sites on time and in conformity with the techniques, in order that farmers can replant after construction.</p> <p>Implement the compensation to affected households with the additional cost in case of the returned land is uncultivable</p>	Complied		
Soil erosion and sedimentation	<p>Avoid excavation and backfilling during rains.</p> <p>Collect and move excess materials and generated wastes out of the construction sites.</p> <p>Avoid temporary gathering of bulk materials and mixing of concrete within 50 m from water sources such as: Huong River, Nong river, Phu Bai river and Ha trung Lagoon.</p>	Complied		

Impact	EMP Requirements (Mitigation Measures)	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
(1)		(2)	(3)	(4)
	Prevent dust spread out by cover silt, sand, soil and material stockpiles, etc., with tarpaulin			
Impact on local utilities and service: Disruption of commercial activities, public services and reduced accessibility to private properties	<p>Inform local leaders and residents about construction activities and schedules in advance (at least 1 week before) through public meetings or information materials posted on public bulletin boards;</p> <p>Remove or temporarily restore the excess excavation materials in suitable areas and disposed at the end of each day</p> <p>Limit segment lengths to what can be excavated. Laying pipes in &amp; filling back within a day, backfilled at the end of each day;</p> <p>Speared out schedules for materials delivery in off-peak hours;</p> <p>Provide safe accesses to blocked properties</p>	Complied		
Air pollution due to dust re-suspension and exhaust gases (CO, NOx, SOx)	<p>Trucks hauling fine aggregates and cement must be well covered.</p> <p>Trucks hauling chemicals and wastes must be well covered.</p> <p>Materials deliveries should take place in off-peak hours.</p> <p>Carry out dust control methods (covers, water sprinkling/water fogging or broom sweeping (if applicable) to prevent dust at prone locations, or increase moisture content for open materials storage piles);</p> <p>Check licenses required by Vietnamese regulations for each type of vehicles. Undertake regular vehicle maintenance and repair program that will be implemented following strictly manufacturer manuals;</p>	Complied		

Impact	EMP Requirements (Mitigation Measures)	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
(1)	(2)		(3)	(4)
	Provide masks and other personal protective equipment (PPEs) to construction workers to minimize inhalation of respirable suspended particulate matters			
Noise pollution caused by construction equipment and machinery	Check licenses required by Vietnamese regulations for each type of vehicle. Undertake a regular vehicle maintenance and repair program that will be implemented following strictly manufacturer manuals; No noisy or vibrating equipment should operate from 6 PM to 5 AM	Complied		
Surface water pollution	Avoid excavation and backfilling during rains. Gather materials and wastes generated during excavation and backfilling, collect and transport them out of the construction site to the approved disposal sites. Do not allow temporary gathering of bulk materials and mixing of concrete within 50 m from Huong river, Nong river and Phu Bai river, Ha Trung lagoon or other water sources. For Ha Trung Lagoon, the pipeline installation volume should be divided into parts, with maximum part length of 50 m for easy installation.	Complied		
Impacts by solid wastes: Generation of solid waste materials from	Regularly collect solid wastes from construction sites and haul out to designated disposal sites;	Complied		

Impact	EMP Requirements (Mitigation Measures)	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
(1)	(2)		(3)	(4)
construction activities and domestic waste from workers' camps that require proper disposal	Install rubbish collection bins at strategic locations within construction sites and workers' quarters; provide adequate covered storage bins/containers, color-coded clearly marked to avoid mixing, especially hazardous wastes			
Soil Pollution	Avoid leakage on machinery operation by using standard machinery and determining the bare amount of petroleum for construction activities. Avoid discharged water from pipe disinfection leaks into environment, make sure water discharge to urban sewage system	Complied		
Destruction of terrestrial flora	Avoid using chemicals that are harmful to plants. Restore the affected terrestrial flora to pre-excavation state	Complied		
Impact on ecosystem in Huong river (Additional Pipeline No.4) Nong River and Phu Bai River (AP No.10) and lagoon (AP No.9)	Establish the collection system and temporary storage areas at least 50m far from water resources for wastes that are harmful to water environment. Avoid prolongation of construction time	Complied		
Impact on fishery at lagoon	Announce the residents about construction schedule. Avoid affecting to the water environment near the construction site.	Complied		

Impact	EMP Requirements (Mitigation Measures)	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
(1)	(2)		(3)	(4)
	The pipeline signal post is to be erected for an easy recognition in the future			
Impact on local traffic on land: Obstruction to local vehicle traffic	<p>Loading of all trucks used for transporting materials and equipment should not exceed the legal limits stipulated by GoV on, such as road loads, speed limits;</p> <p>Minimize loading and transportation of materials and equipment during daily hours (9AM to 5PM) to avoid aggravating conditions on roads in the construction areas.</p> <p>Install visible and sufficient traffic signs especially signage on truck speed limit and truck designated lanes are installed in strategic locations.</p> <p>Limit pipe installation segment lengths to what can be excavated, with maximum of 50 m. Each segments have to be backfilled prior to carry out next segments. All segment to be properly backfilled at end of each day;</p> <p>Store excavated materials within blocked segments of the road without endangering works and obstructing sidewalks and surface drainage. Spoils to be disposed of at end of each day</p>	Complied		
Impact on local traffic on water: Obstruction to local vehicle traffic	<p>For Huong River: construct at daytime (from 7AM to 5PM) and restore site before 5:30PM.</p> <p>For other rivers and lagoon: Install proper and sufficient traffic signs, announce the inhabitants about construction period.</p>	Complied		

Impact	EMP Requirements (Mitigation Measures)	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
(1)	(2)		(3)	(4)
Public nuisances: Possible social disorder created by migrant construction workers	Encourages higher priority for hiring local labor and properly select personnel. Orient workers and staffs on prevention of communicable diseases, such as HIV/AIDS, and other social issues such as smuggling, prostitution, violence and theft.	Complied		
Occupational and Community health and safety	Train workers and key staffs on first aid and emergency response procedures, including or firefighting; Provide personals with required PPE (i.e. safety uniform, safety helmets, safety shoes, gloves, safety belt); Minimize material transport during rainy days. Avoid overloading of transport vehicles beyond capacity of existing roads and bridges. Unsurfaced backfilled road sections are overlain with crushed gravel and with reflectorized warning sign	Complied		
Impacts caused by temporary material storage areas	Inventory of materials in temporary storage areas, especially along road alignments under upgrading or adjacent areas, should only be stored enough for projected works, thus preventing overstocking and minimizing road obstruction; Provide security fences around construction sites including temporary material storages to limit access into the areas;	Complied		

Impact	EMP Requirements (Mitigation Measures)	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
(1)		(2)	(3)	(4)
Impacts by operation of worker's camp	<p>Set up the camps with sufficient supplies of clean water, power, and sanitation facilities. There must be at least one toilet for workers, with separate toilets for males and females. There must be at least one septic tank. The wastewater from the tank should not be discharged into any watercourses without treatment.</p> <p>Clean camps, kitchens, baths, and toilets and sanitize regularly, and keep in good sanitation conditions. Provide dustbins and collect wastes daily from the camps.</p> <p>Clear drainage ditches around the camps periodically.</p> <p>Provide fire-extinguishers, first-aid bags, and medical cabinets with sufficient medicines for treating general diseases in the locality must be provided at construction sites.</p>	Complied		

22. All potential environmental impacts that defined in EMP reports were appropriate with reality situation and occurred during the construction time, except impact on cultural chance finds, incidents for worker/community/environment. All potential environmental impacts were assessed minor to medium level and were controlled by implementation of mitigation measures.

23. The mitigation measures proposed in the EMP reports were complete, specific and suitable with the actual construction conditions of each package. Most of the proposed mitigation measures were implemented in practice when the contractor constructed to reduce the environmental impact.

24. Summary of impacts and requested mitigation measures during construction of three packages HU-CW03, HU-CW05 and HU-CW06 is presented in Table 3 below.

**Table 3: Summary of impacts and requested mitigation measures**

Project activities	Potential impacts	Mitigation measure	Responsible people	Compliance status
<b>Potential impacts and requested mitigation measures in both EMP reports</b>				
Worker camp operation	Pollution on solid waste and wastewater and social problems	All requested mitigation measures to manage solid waste and wastewater and social problems were sufficient and specific.	The contractors: HU-CW03, HU-CW05, HU-CW06	Complied with
Tree and vegetation removal, and site restoration sub-plan	Damage or loss of trees, vegetation, landscape	All requested mitigation measures to reduce losing of tree, vegetation or landscape were sufficient and specific.	The contractors: HU-CW03, HU-CW05, HU-CW06	Complied with
Construction activities	Degradation of water quality & aquatic resources, noise, vibration, dust,	All requested mitigation measures to reduced degradation of water quality & aquatic resources, noise,	The contractors: HU-CW03, HU-CW05, HU-CW06	Complied with



	disruption to public services, labor and community safety, impact on local traffic, landslides, cultural chance finds	vibration, dust, disruption to public services, landslide was sufficient and specific.  All mitigation measures to ensured labour and community safety, local traffic safety was requested specific.		
Construction materials acquisition, transport, and storage	Pollution soil, surface water, injury, disrupted to local traffic.	All requested mitigation measures to reduced pollution soil, surface water, injury, disruption to local traffic were sufficient and specific	The contractors: HU-CW03, HU-CW05, HU-CW06	Complied with
Excavation spoil management	Contamination of land and surface waters from excavated spoil	Mitigation measures on excavation spoil management to reduced contamination of land and surface waters were requested sufficient and specific	The contractors: HU-CW03, HU-CW05, HU-CW06	Complied with
<b>Potential impacts and requested mitigation measures in EMP report for ten additional pipelines</b>				
Construction materials acquisition, transport, and storage and	Impact on local traffic on water: Obstruction to local vehicle traffic	All requested mitigation measures to reduced obstruction to local vehicle traffic on water were sufficient and specific	The contractors: HU-CW03, HU-CW05	Complied with
Construction activities at		Mitigation measures to reduced impact on	The contractors HU-CW05	Complied with

Ha Trung, No. 9 pipeline		fishery at Ha Trung lagoon were specific		
Construction activities at No. 7 and No. 8 pipelines	Impact on agricultural land in Phu My Commune and Phu An Commune (Additional Pipelines No.7), Phong Binh Commune (Additional Pipeline No.8)	All requested mitigation measures to reduced impact on agricultural land in Phu My, Phu An, Phong Binh Communes were sufficient and specific	The contractor: HU-CW05	Complied with
Construction activities at Additional Pipeline No. 4 (along Phu Xuan Bridge) – Huong River	Impact on local traffic on water in Huong River (along Phu Xuan Bridge)	Mitigation measures to reduced impact on local traffic on water in Huong River (along Phu Xuan Bridge) were specific.	The contractor HU-CW03	Complied with

### ***In operation phase***

25. All pipelines have been operating immediately after completion on construction and inspection, consequence, at the end of December 2020, almost of pipelines under the three packages HU-CW03, HU-CW05 and HU-CW06 have been operating, except ten additional pipelines.

26. Mitigation measures in operation phase focused on (i) educating workers in workplace safety of WS system operation according to MoLISA regulations; (ii) prevention public access to all intake areas, pipeline corridors, and distribution networks; (iii) monitoring treated water quality to ensure it meets potable quality standards.

27. The HueWACO has responsibility to implement those mitigation measures in operation phase and they are complying with requirements in EMP, such as: (i) All intake areas are fenced, pipeline networks are located underground and remarked; (ii) HueWACO Company regularly inspects pipeline networks to ensure that it is in good condition and regularly trained workers on workplace safety; (iii) Thua Thien Hue

Department of Health took sampling of treated water from pipeline routes of the project, result of monitor treated water quality is meet QCVN 01-1:2008/BYT. Some testing results of treated water are added in Annex 3.

***Request on prevention COVID 19 pandemic***

28. Since the beginning of the COVID19 pandemic, ADB and Vietnamese Government requested and introduced prevention measures on COVID 19 at Thua Thien Hue subproject. The HueWACO carried out prevention measures as requirement from the government and guidance from ADB as well as request all contractors of HU-CW03, HU-CW05 and HU-CW06 packages implemented prevention COVID19 base on general situation of the pandemic. Specific prevention measures were introduced to all contractors and supervised by CMCS as well as PMU (HueWACO).

29. Although ADB requested to each contractor to prepare COVID19 risks management plan, CSC to review and the PMU to approve, anyhow, the construction contractors of 3 packages HU-CW03, HU-CW05 and HU-CW06 completed construction and handed over at the end of 2019, therefore no construction activities during the year 2020, except 10 additional pipelines. Because time for construction 10 additional pipeline was within a month, PMU requested CMCS and HU-CW03, HU-CW05 contractors to implemented prevention measures: wear appropriate face mask, keep distance, limit communication with local people around the construction site, wash hand before working shift with alcohols 70%. These contractors did not prepare a separate COVID19 risks management plan.

**B. Environment monitoring**

30. Environmental monitoring was conducted in whole construction time of the subproject, from time of commencement of package HU-CW05 and HU-CW06 in April 2018 to December 2020 when construction of ten additional pipelines.

**1. Organizations in charge of implementation environmental monitoring:**

30. Project Management Unit (PMU) - HueWACO was the implementing agencies for the EMP deliverables. The Contract Management and Construction Supervision (CMCS) consultant had responsibility to supervise implementation mitigation measures in EMP by the construction contractors.

31. PMU-HueWACO assigned one Environmental Officer (EO) who was in charge of implementation requirement on environment in EMP. PMU/EO had responsibility ensured compliance with regulation on environmental of ADB's safeguard policy (SPS 2009).

32. The CMCS Consultant had one environmental expert who worked part time as mobilization plan to inspected, evaluated and recorded compliance with the EMP, what

implemented by the construction contractors. The environmental expert of CMCS consultant was similar with ADP's safeguard policy and qualified to carried out these tasks.

33. The construction contractors assigned one staff who was in charge of supervision on conducting mitigation measures on labor safety and environment of the contractor. This staff of all construction contractors of HU-CW03, HU-CW05 and HU-CW06 packages was qualified bout knowledge and experience on labor safety and environment.

## **2. Monitoring organization:**

### *The construction contractors:*

34. During construction phase, the implementation of the EMP is the responsibility of the Contractors. The Contractors' responsibilities include the appropriate and timely application of the mitigating measures stipulated in the approved EMP. The application and implementation of the mitigation measures are to provide the safeguards that will control, reduce if not eliminate unwanted effects during the Subproject implementation.

35. The construction contractors were in charge of preparation quarterly environmental monitoring, which was presented all mitigation measures that the contractor carried out during the quarter, and submitted this report to CMCS for reviewing and approval.

### *The CMCS Consultant:*

36. CMCS Consultant has supported PMU to prepared the updated EMP in 2017 as well as supported PMU to incorporated the requirements in the approved EMP in the bid and contract documents of 3 construction packages.

37. During the construction, the CMCS Consultant conducted construction and environmental supervision, inspections, and maintain records of the Contractors' mitigating measures and activities as well as provide support and advised to the Contractors in implementing EMP.

38. The CMCS assisted PMU in compiling semi-annual monitoring reports for submission to ADB

### *The PMU – HueWACO:*

39. PMU/EO had to ensure that the updated EMP comprises mitigation measures for meeting requirement of the detailed subproject design; submit environmental semi-annual reports of the subproject to ADB; sign a contract with an Environmental Institute for implementation of environmental effect monitoring plan of EMP; disseminate the Grievance Redress Mechanism (GRM) of the subproject

40. During the O&M phase, HueWACO is responsible for adherence to mitigation measures and activities stipulated in the EMP plan which are primarily focused on safe operation of the network of treated water including (i) testing of raw water quality and

treated water quality as well as (ii) applying the health and safety regulations specified in the EMP for the water supply network.

41. The responsibility of relevant stakeholders as well as their compliance status with these responsibilities are presented in Table 4 below:

**Table 4: Responsibilities of stakeholders in the implementation of EMP**

<b>Name of Agency</b>	<b>Responsibilities</b>	<b>Status of compliance</b>
<b>Executing Agency</b> Thua Thien Hue PPC	1. To manage in terms of giving guidelines for the project. 2. To give approvals of important decisions such as procurement plans, DED, etc. 3. The EA will develop a Project Performance Monitoring System (PPMS) to monitor the overall performance of the project. The PPMS will include key indicators of environmental safeguard compliance from the EMP.	Complied Thua Thien Hue PPC issued follow decisions: Decisions No: 2024/QĐ-UBND dated 29/8/2016 on approval DED and estimated cost for the Subproject. Decisions No: 3009/QĐ-UBND dated 22/12/2017 on the plan of contractor selection to implement the subproject (first time). Decisions No: 1257/QĐ-UBND dated 07/6/2018 on the plan of contractor selection to implement the subproject (second time).
<b>Implementation Agency</b> HueWACO	The IA (HueWACO) has the ultimate responsibility for implementation of the entire subproject, including finance and administration, technical and procurement matters, monitoring and evaluation, and environmental safeguard compliance. 1. To direct the PMU to ensure the compliance with the loan covenant and to approve important decisions for the project. 2. To give approvals of proposed activities in case of adverse financial audits or monitoring and evaluation reports.	Being Complied - IEE of the subproject was approved by ADB - Loan Covenant being complied (refer to Table 6 – Summary of Compliance with Loan Covenant)

Name of Agency	Responsibilities	Status of compliance
<b>PMU (under HueWACO)</b>	<ol style="list-style-type: none"> <li>1. To update the EMP during detailed designing and engineering phases to ensure the EMP meets the detailed subproject designs.</li> <li>2. To submit quarterly and annual reports of the subproject to ADB, including reports related to the implementation of the EMP.</li> <li>3. To ensure compliance with the implementation of sub-projects under the guidance of environmental and social aspects of ADB.</li> <li>4. To monitor Contractors in their implementation of the EMP;</li> <li>5. To ensure safeguard requirements of the final EMP are adequately described in the bidding documents;</li> <li>6. To ensure EMP is incorporated in detailed designs and civil contracts;</li> <li>7. To coordinate the capacity development program of the PMU;</li> <li>8. To sign a contract with an Environmental Institute for implementation of monitoring plan of EMP;</li> <li>9. To disseminate the Grievance Redress Mechanism (GRM).</li> </ol>	<p>Being Complied</p> <ul style="list-style-type: none"> <li>- uEMP was prepared by IA and submitted ADB. ADB issued NOL in April 2017</li> <li>- uEMP of Project's Additional Items was prepared and submitted to ADB for approval in November 2019</li> <li>- All environmental requirements in EMP was integrated into the bidding documents.</li> <li>- Submitted semi - annual Environmental Safeguard Monitoring Reports to ADB.</li> <li>- Monitoring contractors in their implementation of the EMP via quarterly report on environment safeguard from contractors.</li> <li>- Carry out environmental effect monitoring by a contract with Environmental Institute for sampling and analysis parameters.</li> <li>- Set up and disclose a GRM for the subproject.</li> </ul>
<b>Contractors</b>	<ol style="list-style-type: none"> <li>1. To implement the requirements of the EMP and related reporting requirements.</li> <li>2. To develop and submit a specific CEMP to meet the requirements of the EMP.</li> <li>3. To obtain necessary permits for construction of the components.</li> </ol>	<p>Being Complied</p> <ul style="list-style-type: none"> <li>- Submitted CEMP to meet the requirements of the EMP</li> <li>- Submit quarterly report on environmental safeguard</li> <li>- Assigned environmental officers</li> </ul>

Name of Agency	Responsibilities	Status of compliance
	<p>4. To appoint a full-time qualified staff to coordinate the implementation of the EMP, including environmental, health and safety issues.</p> <p>5. To cooperate with the PMU to resolve complaints under the GRM.</p> <p>6. To appoint environmental officers responsible for ensuring remedial measures and the EMP are implemented and reported regularly.</p>	<p>- Solve related complaints of local under the GRM in cooperation with the PMU.</p>
<b>Contract Management and Construction Supervision Consultant (CMCS)</b>	1. To monitor remedial measures for environmental protection.	Being Complied
	2. To review site management and safety plans in accordance with approved safety plans, contractual obligations, and current regulations.	Supervise construction activities on the construction sites
	3. To support the PMU in supervising and coordinating EMP implementation. At the same time, the CMCS consults with specialized experts of DoNRE, offices of Natural Resources and Environment in cities/districts and People's Committees under project areas.	<p>Supervise compliance with EMP of the contractors: review CEMP of the contractors, comment on quarterly report on environmental safeguard</p> <p>Prepare semi - annual environmental safeguard monitoring report for PMU to submit ADB.</p>
<b>Environmental Institute</b>	1. An environmental institute will sign a contract with the PMU to implement the environmental impact monitoring plan of the EMP during the construction phase of the subproject.	<p>Complied</p> <p>Take sample and make environmental effect monitoring report as contract with PMU</p>
<b>In operation phase</b>		
<b>Hue WACO</b>	1. As part of implementation of O&M manual for water supply systems instate a regular inspection program	<p>Complied</p> <p>Every week, Hue WACO regularly inspects all</p>

Name of Agency	Responsibilities	Status of compliance
	<p>of all pipeline networks starting at intakes and ending at distribution networks focusing on junctions and end-user connections.</p> <p>2. Take sampling of treated water from pipeline routes of the project</p>	<p>pipeline networks as a part implementation of O&amp;M</p> <p>Treated water from pipeline routes of the project has been tested quality every six months.</p> <p>Some testing results of treated water are added in Annex 3.</p>

### 3. Assessment compliance/performance monitoring

*Requirement on environment in bidding document/construction contract:*

42. Approved uEMPs was included in the tender documents and the construction contract of three packages HU-CW03, HU-CW05, HU-CW06.

43. Two EMPs were updated and submitted to ADB for approval. Besides, CEMPs of contractor for three packages HU-CW03, HU-CW05, HU-CW06 were prepared and submitted to CMCS and PMU for approval. Detail in table 5 below:

**Table 5: Preparation and Approval on environmental documents**

Name of documents	Preparation by	Review and Approval by	Time for approval
uEMP	CMCS/PMU	ABD	April 2017
CEMP of HU-CW03 package	Bach Dang Construction Corporation – JSC	CMCS and PMU	June 28, 2018
CEMP of HU-CW05 package	Joint Venture of Dai Phu Thinh Company Ltd and Southern Construction Joint Stock Company	CMCS and PMU	April 11, 2018
CEMP of HU-CW06 package	Vietnam Water & Environment Investment Corporation - JSC	CMCS and PMU	March 26, 2018
uEMP of Project's Additional	PMU	ADB	November 2019



Items (10 additional pipelines)			
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*Implementation mitigation measures during the construction time:*

44. Mitigation measures that were carried out by the construction contractor of three packages HU-CW03, HU-CW05, HU-CW06 were qualified with requirement in uEMP of the subproject and their CEMP.

45. During the construction time of 3 packages HU-CW03, HU-CW05 and HU-CW06, including construction of 10 additional pipelines, although the contractors fully implemented environmental mitigation measures, there were still some issues that were insufficiently complied with, namely: minimizing dust and noise on the construction site.

46. The monitoring results in Q2, Q3 and Q4 in year 2018 of three packages showed that dust and noise contents at some monitoring points were higher than the permitted standards (specifically in Section 2, Part C of the report). These points were usually located adjacent densely populated areas or industrial zones. The cause was assessed the construction activities of the subproject contractor and the activities of other means of transport on the construction site. However, contractors HU-CW03, HU-CW05 and HU-CW06 were requested to increase the implementation of additional mitigation measures such as: (i) water spraying every day after finishing work on the site, (ii) excavated soil was keeping in trenches / holes must be covered with tarpaulin to prevented dust from being swept away by the wind, (iii) daily cleaned construction site and move mud on the roads; (iv) checked machines regularly to avoided damages and carried out maintenance and testing periodically as well as avoid constructing at noon and night time; (v) did not operate the machine continuously, took breaks 2 or 3 times per shift, rotated operating workers.

47. The others environmental mitigation measures were carried out sufficiently.

48. The contractors carried out corrective actions that required by CMCS/PMU on time and CMCS/PMU supervised and recorded it in the corresponding monitoring reports

**Table 6: Summary of implemented mitigation measure during construction**

Package	Implemented mitigation measures	Pending issues	Requested for follow up actions		
Package HU-CW03			Requested action	Responsibility	Time

	Mitigation measures to reduced environmental impacts that were listed in Table 3 above were implemented sufficient	No	No actions need to be followed up	No	No
Package HU-CW05	Mitigation measures to reduced environmental impacts that were listed in Table 2 above were implemented	No	No actions need to be followed up	No	No
Package HU-CW05	Mitigation measures to reduced environmental impacts that were listed in Table 2 above were implemented	No	No actions need to be followed up	No	No

49. Prevention measures on COVID19: The contractors of HU-CW03, HU-CW05, HU-CW06 package required workers and staffs wear an appropriate face mask, keep distance, limit communication with local people around the construction sites, wash hand before working shift with alcohol 70%, record schedule travelling of workers... during the construction time. There was not any case of COVID19 occurred in the subproject.

50. The CMCS supervised implementation mitigation measures of the construction contractors, including prevention measures on COVID19, required corrective actions immediately for mitigation measures that it was not met requirement. The corrective actions were recorded by CMCS and supervised as well as reported in the quarterly report of the construction contractors and semi-annual reports the CMCS prepared to submit PMU.

#### **4. Public Consultation**

51. Consultation was held in communes with local CPC, affected households. From the last quarter of year 2018 until completion of the subproject, the PMU have

implemented communication on water supply pipe installation plans for household using, price incentives and water consumption price promotion program in the first months of use to poor households and women-headed households in some wards and communes in the project area where the pipeline has been completed installation. This program was included benefit of clean water, improving public health and sanitation, minimizing pollution of the living environment, and ensuring the sustainability of public benefits.

52. During the preparation EMP of ten additional pipelines, the community consultation was organized in January 2019 with 15 meetings with 5 wards, 9 communes on 4 districts (Phong Dien, Huong Thuy, Phu Vang, Phu Loc District) and Hue City. Participants include representative of local authorities, representative of residents who live along the system and representative of investor. Local people and local authorities presented their agreement with project and the new section of pipeline system. They also raised some opinion about the method of minimizing the temporary impact if any. They also understand about the grievance redress mechanism of project and know how to apply it if they want or need. These community comments have been recognized by the PMU (HueWACO) and the PMU committed to compliance during implementation

53. In July 2019 PMU conducted consultation community in 5 areas of the subproject Hue City, Phong Dien, Tu Ha, Loc An, Loc Bon at 10 communes/wards. Total number of participants is 197 people, of which 103 women. The results of consultation community showed that in most of area, after work completion, the contractors restored the sites as former situation. Anyhow, in some area (such as LBKH4 pipeline in Thuy Phu Commune belong to Loc Bon area of package HUE-CW06, in An Dong Ward of Hue City of package HUE-CW05) these contractors had not yet restored construction site as the same before. The CMCS and the PMU supervised strictly restoration construction sites of the contractors after completion their works and there was no more complain from local communities when the contractors finished works in early quarter 4/2019.

54. In generation, public consultation of the Thua Thien Hue subproject was carried by the PMU in cooperation with CMCS during implementation of the subproject. The contractors did not do any consultation activities in the construction time.

## **5. Reporting**

54. Reports of the subproject as requirement in uEMP included: (i) monthly Contractors' Environmental Monitoring Report (CEMR) on environmental issues and mitigation activities to the PMU. (ii) quarterly reports on the EMP of PMU to the EA; and (iii) biannual report on activity and effectiveness of EMP from PMU to ADB.

55. Reports of the subproject as requirement in EMP for ten additional pipelines including: (i) weekly Contractors' Environmental Monitoring Report (CEMR) of the

construction contractor to CMCS; (ii) weekly Environmental Monitoring Report from CMCS to PMU; (iii) biannual report on activity and effectiveness of EMP from PMU to ADB.

56. The construction contractors of three packages HU-CW03, HU-CW05 and HU-CW06 prepared sufficient Contractors' Environmental Monitoring Report to submitted to CMCS and CMCS prepared quarterly Environmental Monitoring Report which was a part of Quarterly Project Progress Report to submitted to PMU.

57. PMU prepared semi-annual environmental monitoring reports from last half part of year 2017. There were 5 semi-annual reports submitted to ADB during the implementation of the subproject. The semi-annual report of the last of year 2018 and the first of year 2019 was combined in one version.

58. Reporting of the subproject was assessed that was complied with the requirement in EMPs although time of submitting semi-annual environmental monitoring reports was not normally on time.

### **C. Summary of results of environment affect monitoring**

#### **1. Sampling program implementation:**

59. Sampling program has conducted first time in April 2018 by the Centre of Natural Resources and Environment Monitoring belonging to DoNRE Thua Thien Hue, who signed contract with the PMU to implement the environmental impact monitoring plan of the subproject.

60. The sampling program of the project was implemented as requirement in updated EMP in August 2017 of the subproject and EMP for Project's Additional Items in November 2019. Base on the requirement in uEMP report, sampling program was carried out quarterly in the construction phase of three packages from April 2018 to December 2019, while sampling program for ten additional pipelines (as EMP for Project's Additional Items) was once before construction and once during the construction time. At the end of the subproject, sampling monitoring was taken 3 times in 2018 from 2<sup>nd</sup> quarter to 4<sup>th</sup> quarter and 2 times in 2019 from 1<sup>st</sup> quarter to 2<sup>nd</sup> quarter as requirement in uEMP. Besides, sampling monitoring for ten additional pipelines was take 2 times, once time on 04/12/2020 before construction and once time on 26 - 27/12/2020 during construction time. Total of sampling monitoring is 7 times from commencement construction to completion of the subproject.

61. Although the requirement in uEMP 2017 was sampling monitoring of air quality, and surface water quality was taken quarterly and soil quality was monitored once time before start excavation, but the first time of sampling monitoring in 2<sup>nd</sup> quarter of 2018, surface water quality was not taken because some pipelines were being constructed at that time were not near any water bodies. At the end of the subproject, surface water was taken 6 times but air quality was monitored 7 times including twice of ten additional

pipelines; while soil was taken 5 times as uEMP 2017, ten additional pipelines were not requested monitoring soil quality.

62. Parameters of air quality, soil quality and surface water quality were tested including:

Air quality: noise, vibration, TSP, SO<sub>2</sub>, CO, and NO<sub>2</sub>;

Soil quality: As, Cd, Pb, Cr, Cu, Zn

Surface water quality: pH, turbidity, DO, TSS, COD, BOD<sub>5</sub>, NH<sub>4</sub><sup>+</sup> -N, NO<sub>3</sub><sup>+</sup> - N, PO<sub>4</sub><sup>+</sup> - P, Fe, Coliform

63. Summary of sampling program implementation is presented in the below table:

**Table 7: Sampling program implementation during the construction phase**

No	Time of sampling monitoring	Environmental Indicators	Packages
1	2 <sup>nd</sup> Quarter of 2018	Air quality and soil quality	HU-CW05 and HU-CW06
2	3 <sup>th</sup> Quarter of 2018	Air quality, surface water quality and soil quality	HU-CW03; HU-CW05 and HU-CW06
3	4 <sup>th</sup> Quarter of 2018	Air quality, surface water quality and soil quality	HU-CW03; HU-CW05 and HU-CW06
4	1 <sup>st</sup> Quarter of 2019	Air quality, surface water quality and soil quality	HU-CW03; HU-CW05 and HU-CW06
5	2 <sup>nd</sup> Quarter of 2019	Air quality, surface water quality and soil quality	HU-CW03; HU-CW05 and HU-CW06
6	December 4 <sup>th</sup> , 2020 (before construction)	Air quality, surface water	HU-CW03; HU-CW05 (ten additional pipelines)
7	December 26 <sup>th</sup> , 2020 (during construction time)	Air quality, surface water	HU-CW03; HU-CW05 (ten additional pipelines)

64. In generation, sampling program of the Thua Thien Hue subproject was conducted fully as requirements in EMPs report.

## **2. Summary of environment quality through conducted sampling programs**

65. Through conducted sampling program, soil and surface water quality were good, all of parameters were under allowable limitation of quality national standards, but air quality was affected by dust and noise at some sampling points. Detail result of sampling program was described as following:

### **In the first sampling monitoring in Q2/2018:**

66. In this time of sampling monitoring, air quality, noise, vibration and soil quality were measured for two packages HU-CW05 and HU-CW06. The result of monitoring showed that all parameters of soil quality, vibration, CO, NO<sub>2</sub> and SO<sub>2</sub> were within the permitted limit according to QCVN 27:2010/BTNMT, QCVN 03 MT:2015/BTNMT, QCVN 05:2013/BTNMT. Anyhow, noise at 4 of 10 points and TPS at one point were exceeded the prescribed standards. Detail is presented in below:

#### **67. Air quality:**

- The concentrations of CO, NO<sub>2</sub>, and SO<sub>2</sub> in air at the monitoring points were measured and met the prescribed standards on QCVN 05:2013/BTNMT – National regulation on ambient air quality.
- The concentration of TSP at the monitoring points was within the permitted limit according to QCVN 05:2013/BTNMT, except for the monitoring point KCTN3 - the resident area near construction site in Huong Xuan commune (HU-CW05 package)

68. *Noise:* There were 4 out of 10 noise measurement points meeting QCVN 26:2010/BTNMT standards. Four points exceeded the prescribed standards, belonged to two package HU-CW05 and HU-CW06 in Phong Dien, Tu Ha, Loc An, Loc Bon areas.,

69. *The vibration:* of all monitoring points met QCVN 27:2010/BTNMT standards.

70. *Soil quality:* The parameters of soil quality assessment at the monitoring points met the QCVN 03 MT:2015/BTNMT – National technical regulation on soil quality

### **In the sampling monitoring during Q3 - Q4 / 2018:**

71. In this time of sampling monitoring, air quality, noise, vibration, surface water and soil quality were measured for two packages HU-CW03, HU-CW05 and HU-CW06. The result of monitoring showed that all parameters of soil quality, surface water, vibration, CO, NO<sub>2</sub> and SO<sub>2</sub> were within the permitted limit according to QCVN 08:2015/BTNMT, QCVN 27:2010/BTNMT, QCVN 03 MT:2015/BTNMT, QCVN 05:2013/BTNMT. Anyhow, noise at 8 of 20 points and TPS at 5 of 20 points were exceeded the prescribed standards. Detail is presented in below:

#### **72. Air quality:**

- In the second annual 2018, the concentrations of CO, NO<sub>2</sub>, and SO<sub>2</sub> in air at the monitoring points were measured and met the prescribed standards on QCVN 05:2013/BTNMT – National regulation on ambient air quality;
- The concentration of TSP at 15 monitoring points was within the permitted limit according to QCVN 05:2013/BTNMT while there were 5 monitoring points were over value of QCVN for both two time of sampling monitoring. The 5 monitoring points were belonged to 3 packages in Phong Dien, Hue City and Loc Bon area.

73. *Noise*: There were 12 out of 20 noise measurement points meeting QCVN 26:2010/BTNMT standards and 8 points exceeded the prescribed standards. The 8 monitoring points were belonged to 3 packages in Phong Dien, Hue City and Loc An - Loc Bon area.

74. *Vibration*: of all monitoring points met QCVN 27:2010/BTNMT standards

75. *Surface water quality*: almost of the parameters met the prescribed standards of type A1 or A2 except DO which was permitted limit according to type B1 of QCVN 08:2015/BTNMT for some samplings point of three packages in Tu Ha, Hue City and Loc An - Loc Bon area.

76. *Soil quality*: All parameters of soil quality assessment at the monitoring points met the QCVN 03 MT:2015/BTNMT – National technical regulation on soil quality

#### **In the sampling monitoring during Q1 - Q2/2019:**

77. In this time of sampling monitoring, air quality, noise, vibration, surface water and soil quality were measured for two packages HU-CW03, HU-CW05 and HU-CW06. The result of monitoring showed that all parameters of soil quality, surface water, vibration, noise and air quality were within the permitted limit according to QCVN 08:2015/BTNMT, QCVN 27:2010/BTNMT, QCVN 03 MT:2015/BTNMT, QCVN 05:2013/BTNMT. Detail is presented in below:

78. *Air quality*: all parameters of air quality, noise and vibration were within allowable limitation according to the prescribed standards of related QCVN: QCVN 05:2013/BTNMT – National regulation on ambient air quality; QCVN 26:2010/BTNMT – National regulation on noise; QCVN 27:2010/BTNMT - National regulation on vibration;

79. *Surface water quality*: All parameters met the standards of type A1 except DO and Ammonium NH<sub>4</sub><sup>+</sup>. DO parameter was permitted limit according to type B1 of QCVN 08:2015/BTNMT in all monitoring points of O Lau river, An Cuu river and Truoi Bridge of three packages in Phong Dien, Hue City and Loc An area.

80. *Soil quality*: All parameters of soil quality assessment at the monitoring points met the QCVN 03 MT:2015/BTNMT – National technical regulation on soil quality

#### **The sampling monitoring for ten additional pipelines in December 2020:**

82. In the two times of sampling monitoring, of which once before construction (dated December 4<sup>th</sup>, 2020) and once during construction time (dated December 26<sup>th</sup>, 2020), air quality, noise, vibration and surface water were measured. The result of monitoring showed that all parameters of surface water, vibration, noise and air quality were within the permitted limit according to QCVN 08:2015/BTNMT, QCVN 27:2010/BTNMT, QCVN 03 MT:2015/BTNMT, QCVN 05:2013/BTNMT. Detail is presented in below:

83. *Air quality, noise and vibration*: all parameters were within allowable limitation according to the prescribed standards of related QCVN: QCVN 05:2013/BTNMT – National technical regulation on ambient air quality; QCVN 26:2010/BTNMT – National

technical regulation on noise; QCVN 27:2010/BTNMT - National technical regulation on vibration

84. *Surface water quality*: All parameters met the standards met the prescribed standards of type B1 of QCVN 08:2015/BTNMT - National regulation on surface water quality.

85. Test results of air quality, noise and vibration and surface water quality for ten additional pipelines was added in Annex of this report.

#### **D. Loan compliance review**

86. All covenants of the subproject were fully complied by the PMU. Detail in the table 5 below:

**Table 8: Summary of Compliance with Loan Covenant**

<b>Schedule</b>	<b>Para No.</b>	<b>Covenant</b>	<b>Status of Compliance</b>
5	4	<p><b><i>Environment</i></b></p> <p>The Borrower, Project Executing Agencies and WSCs shall ensure that the preparation, design, construction, implementation, operation and commissioning of each Subproject and all Project's facilities comply with (a) all applicable laws and regulations of the Borrower related to environment, health, and safety; (b) the Environmental Safeguards; (c) the EARF; and (d) all measures and requirements specified in the respective IEE and EMP, and any corrective or preventative actions outlined in the Safeguard Monitoring Report.</p>	<p>Complied</p> <p>(a) All applicable laws and regulations related to environment, health, and safety such as Law on Environmental Protection 2015 and legal documents on implementation guidance this Law; Labor Code 10/2012/QH13 and legal documents on implementation guidance this Law were applied in the preparation, design, construction, implementation, operation and commissioning of the Hue Subproject.</p> <p>(b) The Environmental Safeguards were applied in the preparation, design, construction, implementation, operation and commissioning of each Subproject (IEE of the Hue subproject was approved by ADB, EMP was prepared by IA and submitted ADB. ADB issued NOL in April 2017)</p> <p>(c) the EARF was prepared in TA of the project and the Hue subproject was followed guiding in the EARF during the preparation, design, construction, implementation, operation and commissioning of the subproject.</p> <p>(d) All measures and requirements specified in the respective IEE and EMP, and any corrective or preventative actions outlined in the Safeguard Monitoring</p>



Schedule	Para No.	Covenant	Status of Compliance
			Reports of the subproject were applied the preparation, design, construction, implementation, operation and commissioning of the subproject.
5	8	<p><b><i>Human and Financial Resources to Implement Safeguard Requirements</i></b></p> <p>The Borrower, Project Executing Agencies and WSCs shall provide the necessary human resources and budget to fully implement EMP, RP and EMDP.</p>	<p>Complied</p> <p>PMU had 1 staff in charge of environmental management of the project.</p> <p>Budget for implementing the EMP was allocated</p>
5	9	<p><b><i>Safeguards-related Provisions in Bidding Documents and Works Contracts</i></b></p> <p>The Borrower, Project Executing Agencies and WSCs shall ensure that all bidding documents and contracts for Works containing provisions that require contractors to:</p> <p>(a) comply with the contractor-related measures and requirements outlined in IEE, EMP, RP and EMDP (to the extent they care about the impact on those affected during construction) and any corrective or preventive action outlined in the Safeguard Monitoring Report;</p> <p>(b) prepare a budget for all environmental and social measures;</p> <p>(c) send the Borrower, Project Executing Agencies and the WSCs with written notices of any unforeseen risks or impacts related to the environment, resettlement or indigenous people arising during the construction, implementation or operation of the Project that are not considered in IEE, EMP, RP or EMDP;</p>	<p>Complied</p> <p>(a) Provision (a) was included in:</p> <ul style="list-style-type: none"> <li>- Sub-clause 4.18 Environmental Protection under Part B – Specific Provision of bidding document of package HU-CW03, HU-CW05, HU-CW06.</li> </ul> <p>(b) Provision (b) was included in:</p> <ul style="list-style-type: none"> <li>- Sub-clause 4.18 Environmental Protection under Part B – Specific Provision of bidding document of package HU-CW03, HU-CW05, HU-CW06 and at Chapter 6 – section 10 Environmental Control in the Construction Contract of HU-CW03, HU-CW05, HU-CW06 packages.</li> </ul> <p>(c) Provision (b) was included in:</p> <ul style="list-style-type: none"> <li>- Sub-clause 4.18 Environmental Protection under Part B – Specific Provision of bidding document of package HU-CW03, HU-CW05, HU-CW06 and at Chapter 6 – section 10 Environmental Control in the Construction Contract of HU-CW03, HU-CW05, HU-CW06 packages.</li> </ul>

Schedule	Para No.	Covenant	Status of Compliance
5	10	<p><b><i>Safeguard Monitoring and Reporting</i></b></p> <p>The Borrower, Project Executing Agencies and WSCs shall perform the followings:</p> <p>(a) submit Semi-Annual Safeguard Monitoring Reports to ADB and disclose relevant information from such reports to affected people promptly upon submission; if there are any unforeseen social risks and/or risks arising during the construction, implementation or operation of the Project that are not considered in the IEE, EMP, RP or EMDP, ADB must be promptly informed of the occurrence of such risks or impacts, with a detailed description of the event and a proposed corrective action plan;</p> <p>(b) promptly report any actual or potential breach of non-compliance with the measures and requirements specified in the EMP, RP or EMDP after having become aware of it.</p>	<p>Complied</p> <p>(a) The first Environmental Safeguards Monitoring Report of the project was prepared for half of last year of 2017. There were more 5 Environmental Safeguards Monitoring reports was prepared and submitted to ADB for approval. All the reports were disclosed in the ADB's website.</p> <p>- All relevant information from these reports were informed to affected people through discussions between PMU/CSC/Contractor with the authorities of the communes/ wards in the project area.</p> <p>- Since the beginning of the COVID19 pandemic, PMU carried out prevention measures as requirement from the government and guidance from ADB, such as (i) providing handwashing liquid, masks, check temperature of staff at PMU office, work at home to keep social distance...(ii) PMU requested CSC and the contractors to implemented prevention measures in the construction sites. Result of prevention COVID19 was mentioned in the SEMRs which will be submitted to ADB for clearance.</p> <p>(b) Any actual or potential breach of compliance with the measures and requirements set forth in the updated EMP were reported in the safeguard monitoring reports prepared by the PMU (semi-annual) submitted to ADB from last 2017.</p>
5	11	<p><b><i>Labor and Health Standards</i></b></p> <p>The Borrower, Project Executing Agencies and WSCs shall ensure that</p> <p>(a) all Project contractors (i) comply with all applicable Borrower labor laws and relevant international treaty</p>	<p>Complied</p> <p>(a) Provision (a) was included in:</p> <p>- Sub-clause 4.18 Environmental Protection under Part B – Specific Provision of bidding document of package HU-CW03, HU-CW05, HU-CW06, and at Chapter 6 –</p>

Schedule	Para No.	Covenant	Status of Compliance
		obligations and do not employ child labor, ( ii) employ female workers and provide equal wages or benefits to working men and women, (iii) provide basic water and sanitation facilities for men and women in construction sites (iv) provide safe working conditions for male and female workers, (v) provide day care services for female construction workers with childcare needs and (vi) implement awareness campaigns and education on human trafficking / HIV / AIDS, STI and human trafficking in construction sites; and (b) All Works contracts must include provisions requiring complying with the above requirements. Compliance is closely monitored. (c) Provide sufficient budget to all signed contracts.	section 10 Environmental Control in the Construction Contract of HU-CW03, HU-CW05, HU-CW06 packages.  (b) Provision (b) was included in: - Sub-clause 4.18 Environmental Protection under Part B – Specific Provision of bidding document of package HU-CW03, HU-CW05, HU-CW06 and at Chapter 6 – section 10 Environmental Control in the Construction Contract of HU-CW03, HU-CW05, HU-CW06 packages.  (c) Provision (b) was included in: - Sub-clause 4.18 Environmental Protection under Part B – Specific Provision of bidding document of package HU-CW03, HU-CW05, HU-CW06 and at Chapter 6 – section 10 Environmental Control in the Construction Contract of HU-CW03, HU-CW05, HU-CW06 packages.

#### **E. Grievance Redress mechanism implementation**

86. A 24/7 Call Centre (Phone no.: 02343 890 890) has been set up in HueWACO's Customer Service Department in March 2014. The Call Centre receives any complaints and queries from customers and then the complaint has directly transferred to the Grievance Unit operated by Construction Enterprise to solve. The Construction Enterprise is a unit under HueWACO. This number was disclosed to fanpage of the HueWACO and informed to customers of the Company via social network such as zalo or message service. Furthermore, it was disclosed on the information board of the contractors.

87. No written grievance has been received and no oral complaints have been reported.

88. All complaint including complaints about the effect of the construction activities of the Thua Thien Hue subproject was also informed to the 24/7 Call Centre.

89. During the construction time, there were not any complaint on the construction activities of the subproject from local people were received. As a result, until end of the December 2020, when all construction work has completed, there are no pending complaints.

#### **F. Lesson learnt from EMP implementation and monitoring**

90. Lesson learnt from EMP implementation are:

(i) The establishment of an environmental management system with the participation of all stakeholders: project executing agency, implementing agency, PMU, supervision

consultant and construction contractor, is very important to carry out monitoring of environmental requirements during implementing the project.

(ii) The full implementation of the environmental effect monitoring program is essential in the construction phase of the packages. It helps to evaluate the effectiveness of the environmental impact mitigation measures, in order to promptly issue corrective requests with the contractor's insufficiently complied issues.

(iii) Public consultation is an effective way to assess contractor's full compliance with environmental requirements during construction.

#### **G. Conclusion and recommendation.**

91. There were no pending EMP implementation issues at project completion time. Although time of submitting semi-annual monitoring reports was not normally on time, anyhow, it did not affect to compliance with the safeguards policy of the subproject. A comprehensive the environmental monitoring program was designed and implemented to address environmental impact from construction activities as well as in the operation phase. The results of the environmental effect monitoring supported CMCS and PMU to recognised which construction packages needed to carried out more corrective actions. The contractors carried out sufficiently corrective actions on time.

92. CMCS, PMU and the construction contractors prepared all environmental reports as requirement during the time of implementation project.


#### **Recommendation**

93. HueWACO – the operation unit has to continue implementing requirement on environment in operation phase that stated in EMPs.

94. Reporting on the EMP implementation is also followed and submitted to ADB until loan closure by HueWACO




### III. ANNEXES

#### Annex 1: Test results of air quality and surface quality for ten additional pipelines



**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
**TRUNG TÂM QUAN TRẮC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

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VILAS 910 VINCERTS 033

Mã số phiếu: 04/210104/KK-TTQTH

Ngày cấp: 04/01/2021

### PHIẾU KẾT QUẢ THỬ NGHIỆM

1. Loại mẫu:
2. Tên khách hàng:
3. Địa chỉ:
4. Phiếu yêu cầu thử nghiệm:
5. Biên bản lấy mẫu:
6. Ngày nhận mẫu:
7. Thời gian thử nghiệm:
8. Ký hiệu mẫu:
9. Số lượng mẫu:
10. Thông tin mẫu:

**KHÔNG KHÍ**  
 Dự án cấp nước tỉnh Thừa Thiên Huế giai đoạn 2011 – 2015, có tính đến giai đoạn 2020 – Công ty TNHH Xây dựng tổng hợp 468  
 Phường Thủy Phương, thị xã Hương Thủy, tỉnh Thừa Thiên Huế  
 1080/YCTN/TTQTH  
 1204/17/BBLM-TTQTH, ngày 04/12/2020  
 27/12/2020  
 27/12/2020 – 04/01/2021  
 K<sub>CNH1</sub>; K<sub>CNH2</sub>  
 02

K<sub>CNH1</sub>: Trên tuyến đường ống D1200 Vạn Niên (khu vực Nhà máy nước Vạn Niên);  
 K<sub>CNH2</sub>: Trên tuyến đường ống D800 Đào Tấn (Ngã ba Đào Tấn – Điện Biên Phủ).

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả		QCVN 05:2013/ BTNMT  TB 1h
				K <sub>CNH1</sub>	K <sub>CNH2</sub>	
1.	Tốc độ gió <sup>(1)(x)</sup>	HD.08.30/TTQTH	m/s	0,8	0,7	-
2.	Độ rung (Gia tốc rung) <sup>(1)(x)</sup>	TCVN 6963:2001	dB	33,9	34,1	-
3.	Tiếng ồn <sup>(1)(x)</sup>	TCVN 7878-2:2010	dB(A)	67,7	68,9	-
4.	SO <sub>2</sub> <sup>(1)</sup>	TCVN 5971:1995	µg/m <sup>3</sup>	< 20	< 20	350
5.	CO <sup>(1)</sup>	ASTM D1945-14	µg/m <sup>3</sup>	< 500	< 500	30.000
6.	NO <sub>2</sub> <sup>(1)</sup>	TCVN 6137:2009	µg/m <sup>3</sup>	< 25	< 25	200
7.	Tổng bụi lơ lửng (TSP) <sup>(1)</sup>	TCVN 5067:1995	µg/m <sup>3</sup>	119	176	300

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 Phòng Kế toán: 0234.3939226

Trang: 1/2



**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
**TRUNG TÂM QUAN TRẮC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

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VILAS 910 VIMCERTS 033

Mã số phiếu: 04/210104/NM-TTQTH

Ngày cấp: 04/01/2021

## PHIẾU KẾT QUẢ THỬ NGHIỆM

- Loại mẫu:
- Tên khách hàng:

- Địa chỉ:

- Phiếu yêu cầu thử nghiệm:

- Biên bản lấy mẫu:

- Ngày nhận mẫu:

- Thời gian thử nghiệm:

- Ký hiệu mẫu:

- Số lượng mẫu:

- Thông tin mẫu:

NM<sub>CNH</sub>: Khu vực cầu Phú Xuân (sông Hương)

### NƯỚC MẶT

Dự án cấp nước tỉnh Thừa Thiên Huế giai đoạn 2011 – 2015, có tính đến giai đoạn 2020 – Công ty TNHH Xây dựng tổng hợp 468

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1080/YCTN/TTQTH

1204/16/BBLM-TTQTH, ngày 04/12/2020

27/12/2020

27/12/2020 – 04/01/2021

NM<sub>CNH</sub>

01

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNH</sub>	A1	A2	B1	B2
1.	Nhiệt độ <sup>(1)(x)</sup>	SMEWW 2550B:2012	<sup>0</sup> C	22,5	-	-	-	-
2.	pH <sup>(1)(x)</sup>	TCVN 6492:2011	-	7,7	6 – 8,5	6 – 8,5	5,5-9	5,5-9
3.	DO <sup>(1)(x)</sup>	TCVN 7325:2016	mg/l	5,9	≥6	≥5	≥4	≥2
4.	BOD <sub>5</sub> (20 <sup>0</sup> C) <sup>(1)</sup>	TCVN 6001-1:2008	mg/l	3,0	4	6	15	25
5.	COD <sup>(1)</sup>	SMEWW 5220-C:2017	mg/l	< 9	10	15	30	50
6.	TSS <sup>(1)</sup>	TCVN 6625:2000	mg/l	7,2	20	30	50	100
7.	NH <sub>4</sub> <sup>+</sup> -N <sup>(1)</sup>	TCVN 6179-1:1996	mg/l	0,158	0,3	0,3	0,9	0,9
8.	NO <sub>3</sub> <sup>-</sup> -N <sup>(1)</sup>	TCVN 6180:1996	mg/l	0,138	2	5	10	15
9.	PO <sub>4</sub> <sup>3-</sup> -P <sup>(1)</sup>	TCVN 6202:2008	mg/l	< 0,018	0,1	0,2	0,3	0,5
10.	As <sup>(1)</sup>	TCVN 6626:2000	mg/l	< 0,0018	0,01	0,02	0,05	0,1
11.	Cd <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,24.10 <sup>-3</sup>	0,005	0,005	0,01	0,01
12.	Pb <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,003	0,02	0,02	0,05	0,05
13.	Tổng dầu mỡ <sup>(1)</sup>	TCVN 5070:1995	mg/l	< 0,3	0,3	0,5	1	1

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Trang: 1/2





**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
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VILAS 910

VIMCERTS 033

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNHI</sub>	A1	A2	B1	B2
14,	Coliform <sup>(1)</sup>	TCVN 6187-2:1996	MPN/ 100mL	4.600	2.500	5.000	7.500	10.000

**Ghi chú:**

- (1): Chỉ tiêu được Bộ TNMT chứng nhận theo số hiệu VIMCERTS 033.
- (x): Thông số đo đạc tại hiện trường
- Kết quả chỉ có giá trị trên mẫu thể hiện trong phiếu này.

**TRƯỞNG PHÒNG THÍ NGHIỆM**

**CN. Nguyễn Đình Phước**

**PHÓ GIÁM ĐỐC**



**KS. Lê Quang Ảnh**



**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ  
TRUNG TÂM QUAN TRẮC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

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VILAS 910 VIMCERTS 033

Mã số phiếu: 05/210104/NM-TTQTH

Ngày cấp: 04/01/2021

## PHIẾU KẾT QUẢ THỬ NGHIỆM

- Loại mẫu:
- Tên khách hàng:

### NƯỚC MẶT

Dự án cấp nước tỉnh Thừa Thiên Huế giai đoạn 2011 – 2015, có tính đến giai đoạn 2020 – Công ty TNHH Xây dựng tổng hợp 468

Phường Thủy Phương, thị xã Hương Thủy, tỉnh Thừa Thiên Huế

1080/YCTN/TTQTH

1204/16/BBLM-TTQTH, ngày 04/12/2020

27/12/2020

27/12/2020 – 04/01/2021

NM<sub>CNH2</sub>

01

- Địa chỉ:

- Phiếu yêu cầu thử nghiệm:

- Biên bản lấy mẫu:

- Ngày nhận mẫu:

- Thời gian thử nghiệm:

- Ký hiệu mẫu:

- Số lượng mẫu:

- Thông tin mẫu:

NM<sub>CNH2</sub>: Khu vực đầm Hà Trung (cuối đường Võ Phi Trắng đi thẳng ra đầm)

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
					NM <sub>CNH2</sub>	A1	A2	B1
1.	Nhiệt độ <sup>(1)(x)</sup>	SMEWW 2550B:2012	°C	20,8	-	-	-	-
2.	pH <sup>(1)(x)</sup>	TCVN 6492:2011	-	7,5	6 – 8,5	6 – 8,5	5,5-9	5,5-9
3.	DO <sup>(1)(x)</sup>	TCVN 7325:2016	mg/l	5,9	≥6	≥5	≥4	≥2
4.	BOD <sub>5</sub> (20°C) <sup>(1)</sup>	TCVN 6001-1:2008	mg/l	4,6	4	6	15	25
5.	COD <sup>(1)</sup>	SMEWW 5220-C:2017	mg/l	16,9	10	15	30	50
6.	TSS <sup>(1)</sup>	TCVN 6625:2000	mg/l	3,6	20	30	50	100
7.	NH <sub>4</sub> <sup>+</sup> -N <sup>(1)</sup>	TCVN 6179-1:1996	mg/l	0,213	0,3	0,3	0,9	0,9
8.	NO <sub>3</sub> <sup>-</sup> -N <sup>(1)</sup>	TCVN 6180:1996	mg/l	0,086	2	5	10	15
9.	PO <sub>4</sub> <sup>3-</sup> -P <sup>(1)</sup>	TCVN 6202:2008	mg/l	0,084	0,1	0,2	0,3	0,5
10.	As <sup>(1)</sup>	TCVN 6626:2000	mg/l	< 0,0018	0,01	0,02	0,05	0,1
11.	Cd <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,24.10 <sup>-3</sup>	0,005	0,005	0,01	0,01
12.	Pb <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,003	0,02	0,02	0,05	0,05
13.	Tổng dầu mỡ <sup>(1)</sup>	TCVN 5070:1995	mg/l	< 0,3	0,3	0,5	1	1

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Phòng Quan trắc: 0234.3996879  
Phòng Kế toán: 0234.3939226  
Phòng Tư vấn kỹ thuật: 0234.3935303

Trang: 1/2





**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
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VILAS 910 VIMCERTS 033

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNH2</sub>	A1	A2	B1	B2
14.	Coliform <sup>(1)</sup>	TCVN 6187-2:1996	MPN/ 100mL	460	2.500	5.000	7.500	10.000

**Ghi chú:**

- (1): Chỉ tiêu được Bộ TNMT chứng nhận theo số hiệu VIMCERTS 033.
- (x): Thông số đo đạc tại hiện trường.
- Kết quả chỉ có giá trị trên mẫu thể hiện trong phiếu này.

**TRƯỞNG PHÒNG THÍ NGHIỆM**

**CN. Nguyễn Đình Phước**

**PHÓ GIÁM ĐỐC**

**KS. Lê Quang Ảnh**



**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
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VILAS 910 VIMCERTS 033

Mã số phiếu: 06/210104/NM-TTQTH

Ngày cấp: 04/01/2021

## PHIẾU KẾT QUẢ THỬ NGHIỆM

- Loại mẫu:
- Tên khách hàng:

### NƯỚC MẶT

Dự án cấp nước tỉnh Thừa Thiên Huế giai đoạn 2011 – 2015, có tính đến giai đoạn 2020 – Công ty TNHH Xây dựng tổng hợp 468

- Địa chỉ:

Phường Thủy Phương, thị xã Hương Thủy, tỉnh Thừa Thiên Huế

- Phiếu yêu cầu thử nghiệm:

1080/YCTN/TTQTH

- Biên bản lấy mẫu:

1204/16/BBLM-TTQTH, ngày 04/12/2020

- Ngày nhận mẫu:

27/12/2020

- Thời gian thử nghiệm:

27/12/2020 – 04/01/2021

- Ký hiệu mẫu:

NM<sub>CNH3</sub>

- Số lượng mẫu:

01

- Thông tin mẫu:

NM<sub>CNH3</sub>: Khu vực sông Phú Bài (ngay cầu Phú Bài dọc QL 1A)

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNH3</sub>	A1	A2	B1	B2
1.	Nhiệt độ <sup>(1)(x)</sup>	SMEWW 2550B:2012	°C	22,0	-	-	-	-
2.	pH <sup>(1)(x)</sup>	TCVN 6492:2011	-	7,6	6 – 8,5	6 – 8,5	5,5-9	5,5-9
3.	DO <sup>(1)(x)</sup>	TCVN 7325:2016	mg/l	6,0	≥6	≥5	≥4	≥2
4.	BOD <sub>5</sub> (20°C) <sup>(1)</sup>	TCVN 6001-1:2008	mg/l	3,7	4	6	15	25
5.	COD <sup>(1)</sup>	SMEWW 5220-C:2017	mg/l	23,2	10	15	30	50
6.	TSS <sup>(1)</sup>	TCVN 6625:2000	mg/l	3,2	20	30	50	100
7.	NH <sub>4</sub> <sup>+</sup> -N <sup>(1)</sup>	TCVN 6179-1:1996	mg/l	0,295	0,3	0,3	0,9	0,9
8.	NO <sub>3</sub> <sup>-</sup> -N <sup>(1)</sup>	TCVN 6180:1996	mg/l	0,190	2	5	10	15
9.	PO <sub>4</sub> <sup>3-</sup> -P <sup>(1)</sup>	TCVN 6202:2008	mg/l	0,030	0,1	0,2	0,3	0,5
10.	As <sup>(1)</sup>	TCVN 6626:2000	mg/l	< 0,0018	0,01	0,02	0,05	0,1
11.	Cd <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,24.10 <sup>-3</sup>	0,005	0,005	0,01	0,01
12.	Pb <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	0,003	0,02	0,02	0,05	0,05
13.	Tổng dầu mỡ <sup>(1)</sup>	TCVN 5070:1995	mg/l	< 0,3	0,3	0,5	1	1

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Phòng Tư vấn kỹ thuật: 0234.3933303

Trang: 1/2



**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
**TRUNG TÂM QUAN TRẮC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

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VILAS 910 VIMCERTS 033

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNH3</sub>	A1	A2	B1	B2
14.	Coliform <sup>(1)</sup>	TCVN 6187-2:1996	MPN/ 100mL	430	2.500	5.000	7.500	10.000

Ghi chú:

- (1): Chỉ tiêu được Bộ TNMT chứng nhận theo số hiệu VIMCERTS 033.
- (x): Thông số đo đạc tại hiện trường.
- Kết quả chỉ có giá trị trên mẫu thể hiện trong phiếu này.

**TRƯỞNG PHÒNG THÍ NGHIỆM**

**CN. Nguyễn Đình Phước**

**PHÓ GIÁM ĐỐC**



**KS. Lê Quang Ảnh**





**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
**TRUNG TÂM QUAN TRÁC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

Địa chỉ: 173 Phạm Văn Đồng, P. Vỹ Dạ, TP. Huế, Thừa Thiên Huế  
Tel: 0234.3939226 Fax: 0234.3935206 Mobile: 0915678191  
Email: ttqtrac.stnmt@thuathienhue.gov.vn



VILAS 910 VIMCERTS 633

Mã số phiếu: 07/210104/NM-TTQTH

Ngày cấp: 04/01/2021

## PHIẾU KẾT QUẢ THỬ NGHIỆM

- Loại mẫu:
- Tên khách hàng:

### NƯỚC MẶT

Dự án cấp nước tỉnh Thừa Thiên Huế giai đoạn 2011 – 2015, có tính đến giai đoạn 2020 – Công ty TNHH Xây dựng tổng hợp 468

Phường Thủy Phương, thị xã Hương Thủy, tỉnh Thừa Thiên Huế

1080/YCTN/TTQTH

1204/16/BBLM-TTQTH, ngày 04/12/2020

27/12/2020

27/12/2020 – 04/01/2021

NM<sub>CNH4</sub>

01

- Địa chỉ:
- Phiếu yêu cầu thử nghiệm:
- Biên bản lấy mẫu:
- Ngày nhận mẫu:
- Thời gian thử nghiệm:
- Ký hiệu mẫu:
- Số lượng mẫu:
- Thông tin mẫu:

NM<sub>CNH4</sub>: Khu vực sông Nong (ngay cầu Nong dọc QL 1A)

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNH4</sub>	A1	A2	B1	B2
1.	Nhiệt độ <sup>(1)(x)</sup>	SMEWW 2550B:2012	°C	22,7	-	-	-	-
2.	pH <sup>(1)(x)</sup>	TCVN 6492:2011	-	7,9	6 – 8,5	6 – 8,5	5,5-9	5,5-9
3.	DO <sup>(1)(x)</sup>	TCVN 7325:2016	mg/l	6,2	≥6	≥5	≥4	≥2
4.	BOD <sub>5</sub> (20°C) <sup>(1)</sup>	TCVN 6001-1:2008	mg/l	1,9	4	6	15	25
5.	COD <sup>(1)</sup>	SMEWW 5220-C:2017	mg/l	< 9	10	15	30	50
6.	TSS <sup>(1)</sup>	TCVN 6625:2000	mg/l	< 2	20	30	50	100
7.	NH <sub>4</sub> <sup>+</sup> -N <sup>(1)</sup>	TCVN 6179-1:1996	mg/l	0,050	0,3	0,3	0,9	0,9
8.	NO <sub>3</sub> <sup>-</sup> -N <sup>(1)</sup>	TCVN 6180:1996	mg/l	0,098	2	5	10	15
9.	PO <sub>4</sub> <sup>3-</sup> -P <sup>(1)</sup>	TCVN 6202:2008	mg/l	< 0,018	0,1	0,2	0,3	0,5
10.	As <sup>(1)</sup>	TCVN 6626:2000	mg/l	< 0,0018	0,01	0,02	0,05	0,1
11.	Cd <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,24.10 <sup>-3</sup>	0,005	0,005	0,01	0,01
12.	Pb <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,003	0,02	0,02	0,05	0,05
13.	Tổng dầu mỡ <sup>(1)</sup>	TCVN 5070:1995	mg/l	< 0,3	0,3	0,5	1	1

BM.02/QT.15/TTQTH \*02/01/2019

Phòng thí nghiệm:

Email: lab173donru.thuathienhue@gmail.com

ĐT: 0234. 3939041

Phòng Quan trắc: 0234.3996879

Phòng Kế toán: 0234.3939226

Phòng Tư vấn kỹ thuật: 0234.3935303

Trang: 1/2



**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
**TRUNG TÂM QUAN TRẮC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

Địa chỉ: 173 Phạm Văn Đồng, P. Võ Dạ, TP. Huế, Thừa Thiên Huế  
Tel: 0234.3939226 Fax: 0234.3935206 Mobile: 0915678191  
Email: tigrac.stnmt@thuathienhue.gov.vn



VILAS 910

VIMCERTS 033

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT				
				NM <sub>CNH4</sub>	A1	A2	B1	B2	
14.	Coliform <sup>(1)</sup>	TCVN 6187-2:1996	MPN/ 100mL	240	2.500	5.000	7.500	10.000	

Ghi chú:

- (1): Chỉ tiêu được Bộ TNMT chứng nhận theo số hiệu VIMCERTS 033.
- (x): Thông số đo đạc tại hiện trường.
- Kết quả chỉ có giá trị trên mẫu thể hiện trong phiếu này.

**TRƯỞNG PHÒNG THÍ NGHIỆM**

**CN. Nguyễn Đình Phước**

**PHÓ GIÁM ĐỐC**



**KS. Lê Quang Ánh**



**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
**TRUNG TÂM QUAN TRẮC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

Địa chỉ: 173 Phạm Văn Đồng, P. Vỹ Dạ, TP. Huế, Thừa Thiên Huế  
Tel: 0234.3939226 Fax: 0234.3935206 Mobile: 0915678191  
Email: ttqtrac.stnmt@thuathienhue.gov.vn



VILAS 910 VINCERTS 933

Mã số phiếu: 08/210104/NM-TTQTH

Ngày cấp: 04/01/2021

## PHIẾU KẾT QUẢ THỬ NGHIỆM

- Loại mẫu:
- Tên khách hàng:

### NƯỚC MẶT

Dự án cấp nước tỉnh Thừa Thiên Huế giai đoạn 2011 – 2015, có tính đến giai đoạn 2020 – Công ty TNHH Xây dựng tổng hợp 468

Phường Thủy Phương, thị xã Hương Thủy, tỉnh Thừa Thiên Huế

1081/YCTN/TTQTH

1226/6/BBLM-TTQTH, ngày 26/12/2020

27/12/2020

27/12/2020 04/01/2021

NM<sub>CNH</sub>

01

- Địa chỉ:
  - Phiếu yêu cầu thử nghiệm:
  - Biên bản lấy mẫu:
  - Ngày nhận mẫu:
  - Thời gian thử nghiệm:
  - Ký hiệu mẫu:
  - Số lượng mẫu:
  - Thông tin mẫu:
- NM<sub>CNH</sub>: Khu vực cầu Phú Xuân (sông Hương)

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNH</sub>	A1	A2	B1	B2
1.	Nhiệt độ <sup>(1)(o)</sup>	SMEWW 2550B:2012	°C	22,1	-	-	-	-
2.	pH <sup>(1)(o)</sup>	TCVN 6492:2011	-	7,6	6 – 8,5	6 – 8,5	5,5-9	5,5-9
3.	DO <sup>(1)(o)</sup>	TCVN 7325:2016	mg/l	5,9	≥6	≥5	≥4	≥2
4.	BOD <sub>5</sub> (20°C) <sup>(o)</sup>	TCVN 6001-1:2008	mg/l	3,0	4	6	15	25
5.	COD <sup>(1)</sup>	SMEWW 5220-C:2017	mg/l	< 9	10	15	30	50
6.	TSS <sup>(1)</sup>	TCVN 6625:2000	mg/l	7,6	20	30	50	100
7.	NH <sub>4</sub> <sup>+</sup> -N <sup>(1)</sup>	TCVN 6179-1:1996	mg/l	0,155	0,3	0,3	0,9	0,9
8.	NO <sub>3</sub> <sup>-</sup> -N <sup>(1)</sup>	TCVN 6180:1996	mg/l	0,139	2	5	10	15
9.	PO <sub>4</sub> <sup>3-</sup> -P <sup>(1)</sup>	TCVN 6202:2008	mg/l	< 0,018	0,1	0,2	0,3	0,5
10.	As <sup>(1)</sup>	TCVN 6626:2000	mg/l	< 0,0018	0,01	0,02	0,05	0,1
11.	Cd <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,24.10 <sup>-3</sup>	0,005	0,005	0,01	0,01
12.	Pb <sup>(1)</sup>	SMEWW 3113B:2017	mg/l	< 0,003	0,02	0,02	0,05	0,05
13.	Tổng dầu mỡ <sup>(1)</sup>	TCVN 5070:1995	mg/l	< 0,3	0,3	0,5	1	1

BM.02/QT.15/TTQTH \*02/01/2019

Phòng thí nghiệm:  
Email: lab171donrr.thuathienhue@gmail.com  
ĐT: 0234. 3939041

Phòng Quản trị: 0234.3996879  
Phòng Kế toán: 0234.3939226  
Phòng Tài vụ kế toán: 0234.3935303

Trang: 1/2





**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG TỈNH THỪA THIÊN HUẾ**  
**TRUNG TÂM QUAN TRẮC TÀI NGUYÊN VÀ MÔI TRƯỜNG**

Địa chỉ: 173 Phạm Văn Đồng, P. Võ Dạ, TP. Huế, Thừa Thiên Huế  
Tel: 0234.3939226 Fax: 0234.3935206 Mobile: 0915678191  
Email: ttqtrac.stnmt@thuathienhue.gov.vn



VILAS 910 VIMCERTS 033

STT	Tên chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT:2015/ BTNMT			
				NM <sub>CNHI</sub>	A1	A2	B1	B2
14.	Coliform <sup>(1)</sup>	TCVN 6187-2:1996	MPN/ 100mL	2.400	2.500	5.000	7.500	10.000

**Ghi chú:**

- (1): Chỉ tiêu được Bộ TNMT chứng nhận theo số hiệu VIMCERTS 033.
- (x): Thông số đo đạc tại hiện trường.
- Kết quả chỉ có giá trị trên mẫu thể hiện trong phiếu này.

**TRƯỞNG PHÒNG THÍ NGHIỆM**

**CN. Nguyễn Đình Phước**

**PHÓ GIÁM ĐỐC**



**KS. Lê Quang Ảnh**

BM.02/QT.15/TTQTH \*02/01/2019

Phòng thí nghiệm:  
Email: lab173donr@thuathienhue@gmail.com  
ĐT: 0234 3939226

Phòng Quan trắc: 0234.3996879  
Phòng Kế toán: 0234.3939226  
Phòng Tư vấn Kỹ thuật: 0234.3915101

Trang: 2/2


## Annex 2: NOL of ADB on extension Package Hue-CS01



Asian Development Bank

FAX

Viet Nam Resident Mission  
3rd Floor, CornerStone Building  
16 Phan Chu Trinh Street, Ha Noi  
Tel (84 24) 3933 1374  
Fax (84 24) 3933 1373

To: Mr. Truong Cong Nam Chairman HUEWACO	Date: 30 September 2019  Fax:
Originator: Satoshi Ishii Principal Urban Development Specialist sishii@adb.org 	

**Subject: Loan 2961-VIE: Water Sector Investment Program–Tranche 2  
Package HUE-CS01 – Post facto No-objection to Contract Addendum No. 8**

Dear Mr. Nam,

1. We have no objection to the contract addendum no. 8 signed on 13 August 2019 between Thua Thien Hue Water Supply JSC and the Joint Venture of HaskoningDHV Nederland B.V – The Netherlands and HaskoningDHV Vietnam Co. Ltd. on a post-facto basis.
2. Basing on the progress of 3 civil work contracts, the addendum of Hue CS1 contract included:
  - Replacement of Ms. Dinh Thi Nguyet as the environment expert from 1 July 2019.
  - Extension of the contract duration to 31 December 2019.

Sincerely,



Steven Schipani  
PAU Head








Asian Development Bank

FAX

Viet Nam Resident Mission  
3rd Floor, CornerStone Building  
16 Phan Chu Trinh Street, Ha Noi  
Tel (84 24) 3933 1374  
Fax (84 24) 3933 1373

To: Mr. Truong Cong Nam Chairman HUEWACO pmu@hewaco.com.vn	Date: 14 December 2020
Originator: Alan Baird Principal Urban Development Specialist, SEUW 	Fax: (0234) 3826580

Subject: Loan 2961-VIE: Water Sector Investment Program–Tranche 2  
Package HUE-CS01 – No-objection to Contract Addendum No. 10

Dear Mr. Nam,

1. We have no objection to the contract addendum no. 10 signed on 3 December 2020 between Thua Thien Hue Water Supply JSC and the Joint Venture of HaskoningDHV Nederland B.V – The Netherlands and HaskoningDHV Vietnam Co. Ltd. on a post-facto basis.
2. Based on the progress of the civil work contracts, the addendum of HUE-CS1 contract includes:
  - Total contract value increases to VND27,810,194,148 and USD469,908 (including taxes), and
  - Contract duration is extended to 31 December 2020.
3. ADB finances all eligible expenditures incurred by 31 December 2020 only.

Sincerely,



Steven Schipani  
Unit Head, Project Administration

cc: Disbursement Unit, VRM

### Annex 3: Testing results of treated water of the pipelines of the subproject

SỞ Y TẾ TỈNH THỪA THIÊN HUẾ  
TRUNG TÂM KIỂM NGHIỆM  
THUỐC, MỸ PHẨM, THỰC PHẨM

17 Trương Định - TP Huế

ĐT/Fax: 0234.3936272

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập - Tự do - Hạnh phúc

Số: 21DV070



## PHIẾU KẾT QUẢ KIỂM NGHIỆM

**Tên mẫu:** Nước sạch mạng Huế

**Nơi sản xuất:** Công ty cổ phần cấp nước Thừa Thiên Huế  
103 Bùi Thị Xuân, thành phố Huế

**Mô tả mẫu:** Mẫu đựng trong chai P.E kín.

**Thời gian lưu mẫu:** Theo thủ tục Xử lý đối tượng thử nghiệm KNH/TT/7.4-01

**Nơi gửi mẫu:** Công ty cổ phần cấp nước Thừa Thiên Huế  
103 Bùi Thị Xuân, thành phố Huế

**Ngày nhận mẫu:** 28/12/2020

**Kết quả kiểm nghiệm:**

STT	Tên chỉ tiêu	Đơn vị	Phương pháp thử	Kết quả
1	Hàm lượng Hydro Sulfua	mg/l	TCVN 6637:2000	KPH (< 0,04)
2	Hàm lượng Chi	mg/l	ISO 15525:2003	KPH (< 5,08.10 <sup>-3</sup> )
3	Hàm lượng Asen	mg/l	ISO 15586:2003	KPH (< 5,67.10 <sup>-3</sup> )
4	Hàm lượng Natri	mg/l	TCVN 6196-1:1996	1,1
5	Hàm lượng Thủy ngân	mg/l	TCVN 7877:2008	KPH (< 0,62.10 <sup>-3</sup> )
6	Hàm lượng Phenol và dẫn xuất phenol	µg/l	US EPA 8041A	KPH (< 0,3)
7	Hàm lượng Benzen	µg/l	US EPA 5021	KPH (< 0,63)
8	Hàm lượng Benzo(a)pyren	µg/l	US EPA 5021	KPH (< 0,5)
9	Hàm lượng Monoclorobenzen	µg/l	US EPA 524.2	KPH (< 60,0)
10	Hàm lượng Monocloramin	µg/l	US EPA 524.2	KPH (< 0,9)
11	Hoạt độ phóng xạ α tổng	Bq/L	SMEWW 7110 B - 2017	KPH (< 0,1)
12	Hoạt độ phóng xạ β tổng	Bq/L	SMEWW 7110 B - 2017	KPH (< 1,0)

Ghi chú: KPH: Không phát hiện (nghĩa là dưới ngưỡng định lượng của phương pháp thử)

Thừa Thiên Huế, ngày 14 tháng 01 năm 2021

GIÁM ĐỐC



Dặng Văn Khánh

- (\*): Chỉ tiêu được thực hiện bởi nhà thầu phụ; (\*\*): Phép thử chưa được Bộ A công nhận

- Thông tin về mẫu và nơi gửi mẫu do khách hàng cung cấp

- Kết quả thử nghiệm chỉ có giá trị đối với mẫu đem thử

SỞ Y TẾ TỈNH THỪA THIÊN HUẾ  
TRUNG TÂM KIỂM NGHIỆM  
THUỐC, MỸ PHẨM, THỰC PHẨM

17 Trương Định - TP Huế  
ĐT/Fax: 0234.3936272

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM  
Độc lập - Tự do - Hạnh phúc

Số: 21DV080

## PHIẾU KẾT QUẢ KIỂM NGHIỆM



**Tên mẫu:** Nước sạch mạng Tứ Hạ

**Nơi sản xuất:** Công ty cổ phần cấp nước Thừa Thiên Huế  
103 Bùi Thị Xuân, thành phố Huế

**Mô tả mẫu:** Mẫu đựng trong chai P.E kín.

**Thời gian lưu mẫu:** Theo thủ tục Xử lý đối tượng thử nghiệm KNH/TT/7.4-01

**Nơi gửi mẫu:** Công ty cổ phần cấp nước Thừa Thiên Huế  
103 Bùi Thị Xuân, thành phố Huế

**Ngày nhận mẫu:** 28/12/2020

**Kết quả kiểm nghiệm:**

STT	Tên chỉ tiêu	Đơn vị	Phương pháp thử	Kết quả
1	Hàm lượng Hydro Sulfua	mg/l	TCVN 6637:2000	KPH (< 0,04)
2	Hàm lượng Chì	mg/l	ISO 15586:2003	KPH (< 5,08.10 <sup>-3</sup> )
3	Hàm lượng Asen	mg/l	ISO 15586:2003	KPH (< 5,67.10 <sup>-3</sup> )
4	Hàm lượng Natri	mg/l	TCVN 6196-1:1996	1,1
5	Hàm lượng Thủy ngân	mg/l	TCVN 7877:2008	KPH (< 0,62.10 <sup>-3</sup> )
6	Hàm lượng Phenol và dẫn xuất phenol	µg/l	US EPA 8041A	KPH (< 0,3)
7	Hàm lượng Benzen	µg/l	US EPA 5021	KPH (< 0,63)
8	Hàm lượng Benzo(a)pyren	µg/l	US EPA 5021	KPH (< 0,5)
9	Hàm lượng Monoclorobenzen	µg/l	US EPA 524.2	KPH (< 60,0)
10	Hàm lượng Monocloramin	µg/l	US EPA 524.2	KPH (< 0,9)
11	Hoạt độ phóng xạ α tổng	Bq/L	SMEWW 7110 B - 2017	KPH (< 0,1)
12	Hoạt độ phóng xạ β tổng	Bq/L	SMEWW 7110 B - 2017	KPH (< 1,0)

Ghi chú: KPH: Không phát hiện (nghĩa là dưới ngưỡng định lượng của phương pháp thử)

Thừa Thiên Huế, ngày 14 tháng 01 năm 2021



*Dặng Văn Khánh*

- (\*): Chỉ tiêu được thực hiện bởi nhà thầu phụ; (\*\*): Phép thử chưa được Bộ A công nhận  
- Thông tin về mẫu và nơi gửi mẫu do khách hàng cung cấp  
- Kết quả thử nghiệm chỉ có giá trị đối với mẫu đem thử  
- Trung tâm không nhận khiêu nại trong trường hợp không có mẫu hay không hết thời hạn thử mẫu theo quy định



SỞ Y TẾ TỈNH THỪA THIÊN HUẾ  
TRUNG TÂM KIỂM NGHIỆM  
THUỐC, MỸ PHẨM, THỰC PHẨM

17 Trương Định - TP Huế  
ĐT/Fax: 0234.3936272

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM  
Độc lập - Tự do - Hạnh phúc

Số: 21DV072

## PHIẾU KẾT QUẢ KIỂM NGHIỆM



**Tên mẫu:** Nước sạch mạng Lộc An

**Nơi sản xuất:** Công ty cổ phần cấp nước Thừa Thiên Huế  
103 Bùi Thị Xuân, thành phố Huế

**Mô tả mẫu:** Mẫu đựng trong chai P.E kín.

**Thời gian lưu mẫu:** Theo thủ tục Xử lý đối tượng thử nghiệm KNH/TT/7.4-01

**Nơi gửi mẫu:** Công ty cổ phần cấp nước Thừa Thiên Huế  
103 Bùi Thị Xuân, thành phố Huế

**Ngày nhận mẫu:** 28/12/2020

**Kết quả kiểm nghiệm:**

STT	Tên chỉ tiêu	Đơn vị	Phương pháp thử	Kết quả
1	Hàm lượng Hydro Sulfua	mg/l	TCVN 6637:2000	KPH (< 0,04)
2	Hàm lượng Chì	mg/l	ISO 15586:2003	KPH (< 5,08.10 <sup>-3</sup> )
3	Hàm lượng Asen	mg/l	ISO 15586:2003	KPH (< 5,67.10 <sup>-3</sup> )
4	Hàm lượng Natri	mg/l	TCVN 6196-1:1996	0,63
5	Hàm lượng Thủy ngân	mg/l	TCVN 7877:2008	KPH (< 0,62.10 <sup>-3</sup> )
6	Hàm lượng Phenol và dẫn xuất phenol	µg/l	US EPA 8041A	KPH (< 0,3)
7	Hàm lượng Benzen	µg/l	US EPA 5021	KPH (< 0,63)
8	Hàm lượng Benzo(a)pyren	µg/l	US EPA 5021	KPH (< 0,5)
9	Hàm lượng Monoclorobenzen	µg/l	US EPA 524.2	KPH (< 60,0)
10	Hàm lượng Monocloramin	µg/l	US EPA 524.2	KPH (< 0,9)
11	Hoạt độ phóng xạ α tổng	Bq/L	SMEWW 7110 B - 2017	KPH (< 0,1)
12	Hoạt độ phóng xạ β tổng	Bq/L	SMEWW 7110 B - 2017	KPH (< 1,0)

Ghi chú: KPH: Không phát hiện (nghĩa là dưới ngưỡng định lượng của phương pháp thử)

Thừa Thiên Huế, ngày 14 tháng 01 năm 2021

GIÁM ĐỐC



*Dũng Văn Khánh*

- (\*): Chỉ tiêu được thực hiện bởi nhà thầu phụ; (\*\*): Phép thử chưa được Bộ công nhận  
- Thông tin về mẫu và nơi gửi mẫu do khách hàng cung cấp  
- Kết quả thử nghiệm chỉ có giá trị đối với mẫu đem thử