NAM NGIEP 1
POWER COMPANY

Nam Ngiep 1 Hydropower Project

Environmental Management
Monthly Monitoring Report

April 2021

A	15 May 2021	Hendra WINASTU	Wanidaporn RODE	Khamlar PHONSAVAT	Final
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TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

EXECUTIVE SUMMARY

The preparation and review of the ISO 14001:2015 documentation is ongoing. The training on ISO14001:2015 Internal Audit is scheduled on 11-12 May 2021 and will be followed by the ISO Internal Audit which is expected to start by mid May 2021. A short-term ISO document preparation consultant (2-month) was contracted to support the preparation of documents.

During April 2021, EMO received four documents (DWP and SS-ESMMPs) for review and approval. No Site Inspection Reports (SIRs) were issued to the relevant Contractors.

On 06 April 2021, a joint site inspection with EDL was conducted along the 115 kV Transmission Line. The inspection did not identify any significant environmental or social issues. EDL is preparing the inspection report and will share it with NNP1PC when completed.

A contract with Soulignet Choummanitham Construction Sole Co., Ltd. (SCC) was signed on 09 April 2021 for NNP1PC wastewater treatment system improvement and modification. The Contractor have been mobilized to site and commenced the work on 26 April 2021.

In April 2021, water quality sampling and depth profile measurements at R01, R02 and R03 (main reservoir) were suspended due to security concerns. At R05 close to the dam, the Dissolved Oxygen (DO) levels at the surface were generally between 6 mg/L and 8 mg/L and the oxycline was generally found at a depth of 10-11 m - similar to March 2021. In the re-regulation reservoir, the mean DO levels over the entire water column were 1.6 mg/L in R06 and 1.7 mg/L in R07.

During April 2021, the discharge from the re-regulation dam mainly went through the turbine and occasionally through the gate. Only DO concentration during the gate discharge were greater than 6 mg/L at the stations in Nam Ngiep immediately downstream of the Re-regulation Dam and complied with the GOL Standard. No dead fish was observed in Nam Ngiep downstream during this monitoring period. NNP1PC is still in the process of collecting information to assist in developing measures to improve the DO levels downstream.

The selection of the local waste collection contractors for the project's waste and landfill operation, and the communities' waste and Houay Soup landfill operation were completed. One-year service contracts were signed with the two local contractors on 05 April 2021. The waste collection and landfill operation were resumed on 12 April 2021.

In April 2021, a total of 18.2 m^3 of solid waste was disposed of at the NNP1 Project Landfill, a decrease of 2.2 m^3 compared with March 2021. A total of 28.1 m^3 of solid waste from Phouhomxay, Thahuea and Hat Gniun Villages was disposed of at Houay Soup Landfill, an increase of 13.2 m^3 compared with March 2021 due to some of non-collection wastes during the transition period. There was no recycle waste trade activity in the Community Waste Bank during the reporting period.

The forest patrolling under NNP1 WMP by Bolikhamxay WRPO continued in April 2021. Biodiversity offset related activities under the components of law enforcement, community outreach, and conservation linked livelihood in the NC-NX offset site also continued during the reporting period.

The results of fishery monitoring for March and April 2021 will be reported in May 2021 due to late completion in data collection related with the COVID-19 lockdown.

1. ENVIRONMENTAL MANAGEMENT MONITORING

1.1 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The preparation and review of the ISO 14001:2015 documentation is ongoing. The training on ISO14001:2015 Internal Audit is scheduled on 11-12 May 2021 and will be followed by the ISO Internal Audit which is expected to start by mid May 2021. A short-term ISO document preparation consultant (2-month) was contracted to support the preparation of documents.

TABLE 1-1: ENVIRONMENTAL MANAGEMENT SYSTEM WORK PLAN-REVISED IN APRIL 2021

Item	ISO14001:2015 Work Plan	Year 2020		Year 2021			
		Q3	Q4	Q1	Q2	Q3	Q4
1	Continue to prepare EMS documents						
2	**NNP1PC Environmental Policy announcement**						
3	NNP1PC ISO Committee establishment						
4	Training relevant staff on: - Requirement and Interpretation of ISO14001:2015 - Organization Context and Risk Management for ISO14001 - ISO14001:2015 Document Information - ISO14001:2015 Internal Audit						
5	Implement the EMS procedures and processes						
6	ISO14001:2015 Internal Audit						
7	Implement the corrective actions and preventive actions according to the Internal Audit						
8	Management Review by NNP1PC Management						
9	ISO 14001:2015 Assessment and Certification Audit – **1st Stage** (***remote audit*** on the documentation review)						
10	Implement the corrective actions and preventive actions according to the 1st Stage Audit						
11	ISO 14001:2015 Assessment and Certification Audit – **2nd Stage** (***on-site audit***)						
12	Implement the corrective actions and preventive actions according to the 2nd Stage Audit						
13	**Certify of ISO14001:2015 upon successful completion of the audit**						

	Completed activities per the original plan
	Delayed activities and postponed from the previous quarter
	Originally planned activities

1.2 COMPLIANCE MANAGEMENT

In April 2021, EMO received 04 Detail Work Programs (DWPs) and Site Specific Environmental and Social Monitoring and Management Plans (SS-ESMMPs) for review and approval. The status of documents review is presented in ***Table 1-2***.

TABLE 1-2: SS-ESMMP AND DOCUMENT REVIEW STATUS IN APRIL 2021

Title	Date Received	Status
DWP & SS-ESMMP for routine Maintenance and Repairing Works	02 April 2021 (1st submission)	No objection with no comments on 09 April 2021
DWP & SS-ESMMP for Project's Solid Waste Management and Landfill Operation	16 April 2021 (1st submission)	No objection with comments on 20 April 2021
DWP & SS-ESMMP for Community Solid Waste Management and Houay Soup Landfill Operation	18 April 2021 (1st submission)	No objection with comments on 20 April 2021
DWP & SS-ESMMP for Wastewater Treatment Systems Improvement and Modification	18 April 2021 (1st submission)	No objection with comments on 23 April 2021

On 06 April 2021, a joint site inspection with EDL was conducted along the 115 kV Transmission Line. The inspection did not identify any significant environmental or social issue. The inspection report is under preparing by EDL and it will be shared with NNP1PC when completed.

FIGURE 1-1: PHOTOS OF JOINT SITE INSPECTION ON TRANSMISSION LINE 115 KV APRIL 2021

TOWER NO. 16	TOWER NO. 24
	

NNP1PC did not issue any Observations of Non-Compliance during April 2021. The status of compliance reports (Observation of Non-Compliance or ONC, Non-Compliance Report or NCR) issued by NNP1PC is summarized in ***Table 1-3*** and all ONCs and NCRs have been solved.

TABLE 1-3: SUMMARY OF ONCS AND NCRS

Items	ONC	NCR-1	NCR-2	NCR-3
Carried over from March 2021	1	0	0	0
Newly Opened in April 2021	0	0	0	0
Total in April 2020	**1**	**0**	**0**	**0**
Resolved in April 2021	1	0	0	0
Carried over to May 2021	0	**0**	0	0
Unsolved Exceeding Deadlines	**0**	**0**	**0**	**0**

1.2.1 Site Inspection by Environment Management Unit (EMU)

The monthly site visit by the EMU of Bolikhan District and the quarterly site visit by the EMU of Xaysomboun Province were not carried out in April 2021.

1.2.2 Site Decommissioning and Rehabilitation

During the reporting period of April 2021, EMO continued to monitor the progress of rehabilitation for two sites (Phouhomxay Village's Irrigation canal rock and spoil disposal area and LILAMA10 camp), and based on site observations, EMO assessed that it is highly likely that the percentage of vegetation cover will reach 70% as planned after the 2021 wet season.

1.3 WATER QUALITY MONITORING

The analyses of Total Suspended Solids (TSS), Biochemical Oxygen Demand (BOD_5), Faecal Coliform Bacteria, Total Coliform Bacteria and *E.coli* have been carried out by NNP1PC's environmental laboratory since August 2017.

All data are reported to the Ministry of Natural Resources and Environment (MONRE) monthly, and quarterly to the ADB. The reports are also published on the Company's website at https://namngiep1.com/resources/monitoring-reports/

1.3.1 Effluent Discharge from Camps and Construction Sites

Detailed monitoring results are provided in the ***Annex B*** of this Report. The effluent camp monitoring results in April 2021 indicated non-compliances for some parameters in OSOV1 (EF01), OSOV2 (EF13) and the Main Powerhouse (EF19).

The status of implementation of the corrective actions addressing non-compliances at the camps and key project facilities are summarized in ***Table 1-4.***

TABLE 1-4: STATUS OF CORRECTIVE ACTIONS FOR NON-COMPLIANCES AT WWTSS IN APRIL 2021

Site	Sampling ID	Status	Corrective Actions
OSOV1	EF01	Non-compliance for Total Nitrogen in the first fortnightly sampling. However, full compliance in the second fortnightly sampling.	Soulignet Choummanitham Construction Sole Company Limited Co., Ltd. (SCC) commenced the wastewater treatment systems improvement work on 26 April 2021.
OSOV2	EF13	Non-compliance for Ammonia Nitrogen and Total Nitrogen.	
Main Powerhouse	EF19	Non-compliance for TSS, COD, Ammonia Nitrogen, Total Phosphorus and Total Nitrogen in the second fortnightly sampling. No discharge during the first sampling.	

1.3.2 Ambient Surface Water and Reservoir Water Quality Monitoring

The ambient surface water and reservoir water quality monitoring programme comprises five monitoring stations in the main reservoir (R01-R05), two stations in the Re-regulation reservoir (R06 and R07), five stations in the mainstream Nam Ngiep (NNG01 and NNG05 to NNG08) and four stations in the main tributaries to Nam Ngiep (Nam Chiane [NCH01], Nam Phouan [NPH01], Nam Xao [NXA01] and Nam Houay Soup [NHS01]).

In addition, weekly depth profile monitoring (pH, DO, conductivity and temperature) has been undertaken since 18 September 2018 for stations located in the Re-regulation and main reservoirs. The locations of the monitoring stations are shown in ***Figure 1-2.***

The monitoring results for key parameters (DO, TSS and BOD_5) during April 2021 are presented in ***Table 1-5, Table 1-6*** *and* ***Table 1-7.*** The full set of data for April 2021 is attached in ***Annex A***. In addition, the results for DO are presented as line graphs in ***Figure 1-3***.

Main Reservoir

From 01 to 30 April 2021, the water level in the main reservoir decreased from El. 305.31 m asl to El. 302.21 m asl.

Depth profile measurements and sampling at R01, R02 and R03 were suspended due to security concerns during April 2021.

At R05, the station closest to the main dam, as the water temperature increased, the thermocline was clearly observed at a depth interval from about 8.5 m to 9.5 m with an average DO concentration of 8.3 mg/L in the upper 7.5 m varying between 5.5 mg/L and 9.9 mg/L. DO concentrations below 0.5 mg/L (anoxic condition) were recorded at depths between 15 m and 100 m corresponding to 14 m above the centre line of the Intake in early April 2021 to 11 m above the

centre line by the end of the month, taking into consideration the lowering of the reservoir level over the period.

At R04, the DO levels in the upper 6.5 m varied between 6.3 mg/L and 9.0 mg/L, and the DO concentrations dropped to below 2 mg/L at a depth of about 12 m.

As expected, the TSS concentrations in the main reservoir have been consistently low since the start of impounding with a mean of 5 mg/L compared with the high flow season means of about 100 – 250 mg/L and low flow season means of 20 mg/L - 50 mg/L.

The BOD_5 measurements at R04 and R05 in both epilimnion and hypolimnion were less than 1.0 mg/L.

Re-regulation Reservoir

In April 2021, the turbine discharges from the main powerhouse varied between 60 and 232 m^3/s usually interrupted by night-time periods with no discharge.

The mean DO levels over the entire water column were 1.6 mg/L in R06 and 1.7 mg/L in R07 during April 2021. At two monitoring rounds, the DO concentrations were between 2 mg/L and 4 mg/L in the upper 1.5 m.

The BOD_5 concentrations in R06 and R07 was 4.9 mg/L and 2.1 mg/L respectively.

Nam Ngiep Downstream

During April 2021, the discharge from the re-regulation dam mainly went through the turbine and occasionally through the gate.

During periods with turbine discharge, the DO concentrations at NNG05 about 1.8 km downstream of the re-regulation dam varied between 2.7 mg/L and 3.6 mg/L and gradually increased to between 5.2 mg/L and 6.4 mg/L at NNG07 some 25.9 km from the dam. At NNG08 close to the confluence with the Mekong River (47.2 km from the dam), the DO levels were between 6.2 mg/L and 7.0 mg/L with an average of 6.7 mg/L. One of the sampling rounds occurred during gate discharge and due to the reaeration generated by the turbulence at the gate, all stations had DO concentrations above 6 mg/L.

No dead fish was observed in Nam Ngiep downstream during this monitoring period. NNP1PC is still in the process of collecting information to assist in developing measures to improve the DO levels downstream.

The BOD_5 in the downstream station (NNG05) was 1.3 mg/L and complied with the national surface water quality standard.

Main Tributaries to Nam Ngiep

All monitored parameters in the main tributaries to Nam Ngiep river complied with the standard, except faecal coliform at NCH01, DO and COD at NXA01 and NHS01 (on 07 April 2021).

FIGURE 1-2: SURFACE WATER AND RE-REGULATION RESERVOIR WATER QUALITY MONITORING STATIONS

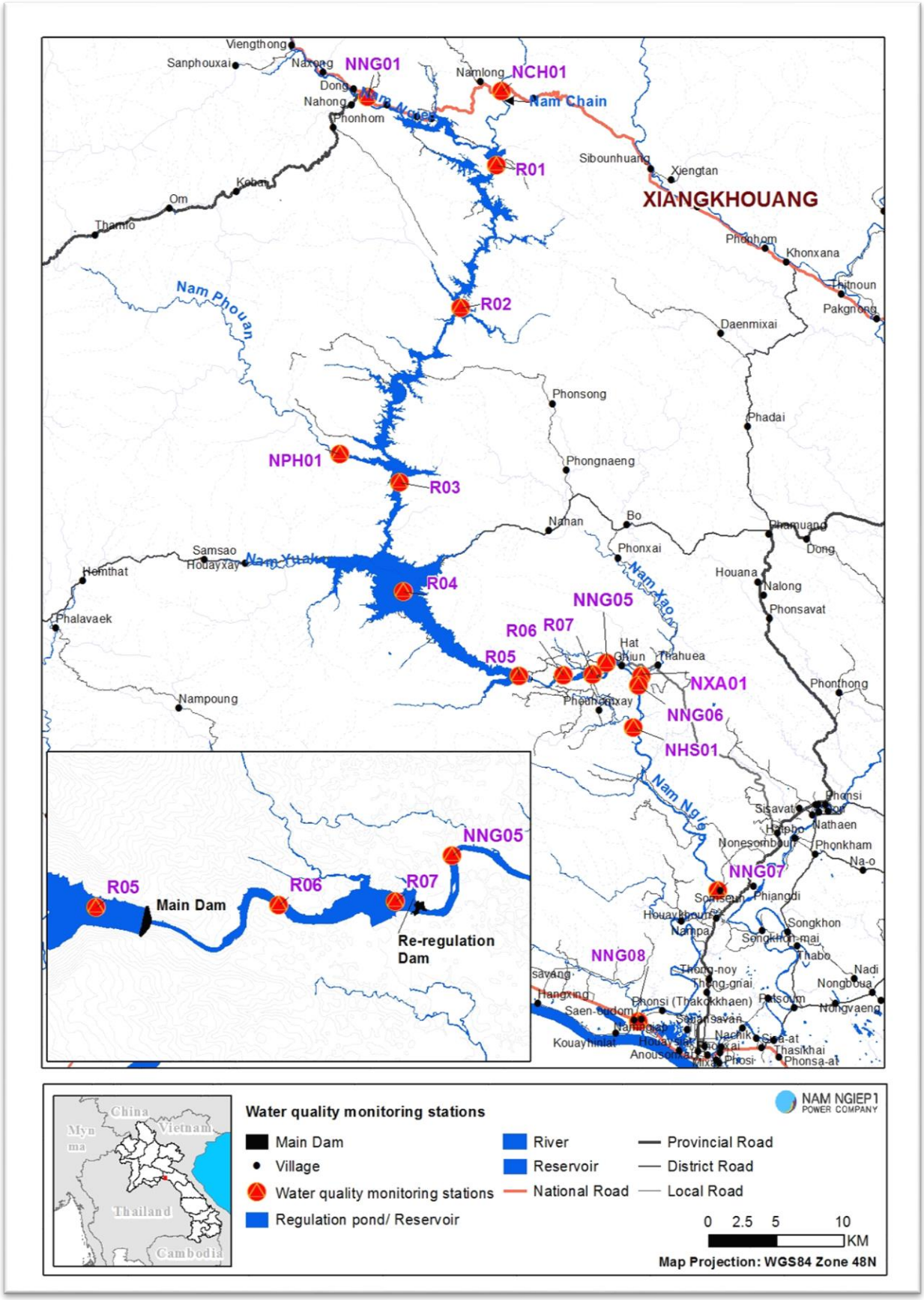


FIGURE 1-3: CONCENTRATION OF DISSOLVED OXYGEN (MG/L) IN THE UPPER 0.2 M SINCE SEPTEMBER 2019 TO APRIL 2021

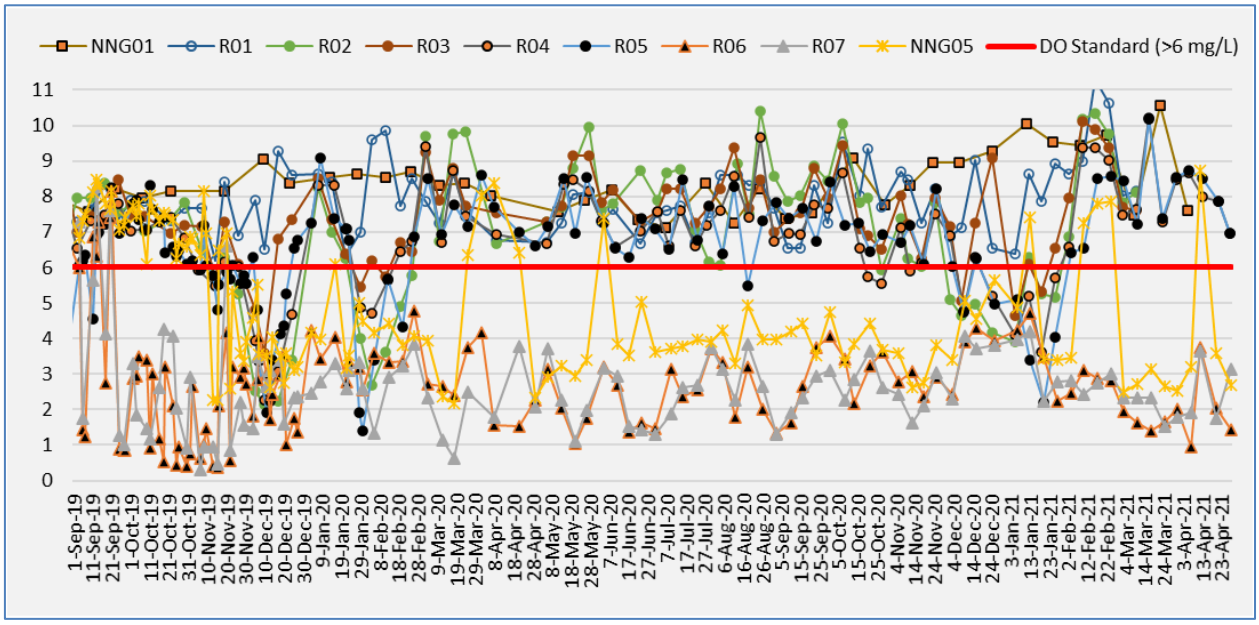


TABLE 1-5: RESULTS OF SURFACE WATER QUALITY MONITORING FOR DISSOLVED OXYGEN (MG/L) IN THE UPPER 0.2 M, NATIONAL WATER QUALITY STANDARD: >6.0 MG/L

DO (mg/L)	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
5-Apr-21	7.61												7.81			
6-Apr-21					8.66	8.73										
7-Apr-21							0.94	1.92	3.2	3.89	5.69	6.73			5.45	5.22
12-Apr-21							3.76	3.65	8.73	7.03	6.51	7.11			8.84	7.5
13-Apr-21					7.98	8.52										
20-Apr-21							2.03	1.75	3.6	3.8	5.23	6.2			6.89	6.66
21-Apr-21					7.86	7.86										
27-Apr-21					6.95	6.96										
28-Apr-21							1.43	3.14	2.69	3.29	6.41	7.03			6.5	6.24

TABLE 1-6: RESULTS OF SURFACE WATER QUALITY MONITORING FOR TOTAL SUSPENDED SOLIDS (MG/L)

Total Suspended Solids (mg/L)	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
5-Apr-21	45.77												5.8			
6-Apr-21					<5	<5										
6-Apr-21 Hypolimnion					<5	<5										
7-Apr-21					<5	<5	<5	<5	31	32.53	22.4	47.7			<5	<5

TABLE 1-7: RESULTS OF SURFACE WATER QUALITY MONITORING FOR BOD_5 (MG/L) - WATER QUALITY STANDARD: < 1.5 MG/L

BOD_5 (mg/L)	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
5-Apr-21	<1												<1			
6-Apr-21					<1	<1										
6-Apr-21 Hypolimnion					<1	<1										
7-Apr-21							4.92	2.16	1.25	<1	<1	<1			<1	<1

1.3.3 Groundwater Quality Monitoring

During April 2021, community groundwater quality analyses were carried out for six wells located in Somseun Village, Nam Pa Village, Thong Noy Village, Pou Village and Phouhomxay Village. The community groundwater samples were taken from household water tap, except in Phouhomxay Village where the groundwater samples were taken at sampling points before entering into the water storage tank.

The results indicate that:

- The two wells in Phouhomxay Village (GPHX01 and GPHX02) complied with the groundwater quality standards for drinking purposes, except for pH which was below the lower threshold, however, this has no health implications;
- The well in Somsuen Village, one well in ThongNoy Village, and one well in Nam Pa Village did not comply with the standards for faecal coliform and *E.coli* bacteria.
- The well in Pou Village did not comply with the groundwater quality standards for faecal coliform and E.*coli* bacter.

The community groundwater quality monitoring results are presented in ***Table 1-8.***

The villagers were advised to boil water before drinking. This advice is in accordance with the Law on Hygiene, Disease Prevention and Health Promotion No 01/NA of 10 April 2001, which states that domestic water supply for daily use is not required to be readily drinkable but would normally have to be boiled or otherwise treated before it would be suitable for drinking. The villagers generally use tap water for washing and cleaning. They were informed about the monitoring results and

recommended to carry out the operation and maintenance improvement as well as were encouraged to boil water before drinking.

TABLE 1-8: GROUNDWATER QUALITY MONITORING RESULTS IN SOMSUEN, NAM PA, THONGNOY AND POU VILLAGES

Parameter (Unit)	Site Name	Phouhomxay Village		Somseun Village	Nampa Village	Thongnoy Village	Pou Village
	Station	GPHX01	GPHX02	GSXN01	GNPA01	GTHN01	GPOU01
	Guideline*						
pH	6.5 - 9.2	6.1	6.15	7.17	6.96	6.76	6.65
Sat. DO (%)		44.4	35.9	52.4	92.4	79.6	80.7
DO (mg/L)		3.62	2.95	4.02	6.99	6.08	5.83
Conductivity (µS/cm)		207	425	361	397	424	29
Temperature (°C)		25.88	26.63	29.42	29.87	29.35	29.7
Turbidity (NTU)	<20	1.23	0.69	2.17	1.97	2.44	4.64
Faecal coliform (MPN/100mL)		0	0	6.8	240	49	240
E.coli Bacteria (MPN/100mL)	0	0	0	6.8	240	49	240

*These are groundwater quality standards for drinking purposes attached in the concession agreement.

1.3.4 Gravity Fed Water Supply (GFWS) Quality Monitoring

The results of the Gravity Fed Water Supply water quality analyses are presented in ***Table 1-9***.

Faecal Coliform and *E.coli* exceeded the drinking water quality standards in the water supply of Thaheua Village (WTHH02), Hat Gnuin Village (WHGN02) and Phouhomxay Village (WPHX02 – Primary School Water Tap and WPHX03 – Household Water Tap). Note here that during sampling of tap water in Phouhomxay Village, surface water from Houay Soup Stream was still supplied into the system and the samples likely represent a mixture of surface water and groundwater from the boreholes *(GPHX01 and GPHX02 – **Table 1-8**), which as mentioned in Section **Error! Reference s ource not found.** complied with the Drinking Water Quality Standards for all parameters)*.

As observed in the field during water sampling, livestock are roaming around the water intake areas and feces from birds may also contribute to the presence of Faecal Coliform Bacteria and *E.coli* in GFWS samples. The villagers were advised to boil water before drinking. This advice is in accordance with the Law on Hygiene, Disease Prevention and Health Promotion No 01/NA of 10 April 2001, which states that domestic water supply for daily use is not required to be readily drinkable but would normally have to be boiled or otherwise treated before it would be suitable for drinking. The villagers generally use tap water for washing and cleaning. They were informed about the monitoring results and were encouraged to boil water before drinking.

TABLE 1-9: RESULTS OF THE GRAVITY FED WATER SUPPLY QUALITY MONITORING

	Site Name	Thaheua Village	Hat Gnuin Village	Phouhomxay Village	
	Station	WTHH02	WHGN02	WPHX02	WPHX03
Parameter (Unit)	Guideline*				
pH	6.5 - 8.6	6.77	6.45	7.02	6.85
Sat. DO (%)		78.2	93.8	85.2	74.7
DO (mg/L)		6.16	7.38	6.63	5.83
Conductivity (µS/cm)	<1,000	70	107	57	72
Temperature (°C)	<35	27.67	27.49	28.2	28.21
Turbidity (NTU)	<10	0.67	1.26	0.46	0.55
Faecal Coliform (MPN/100 mL)	0	17	34	33	49
E.coli Bacteria (MPN/100 mL)	0	17	27	33	14

*These are drinking water quality standards attached in the concession agreement.

1.3.5 Landfill Leachate Monitoring

During April 2021, landfill leachate monitoring was not conducted at NNP1 Project Landfill and Houay Soup Solid Waste Landfill due to the ponds were dry.

1.4 DISCHARGE MONITORING

1.4.1 Main Reservoir – Water Level, Inflow and Discharge

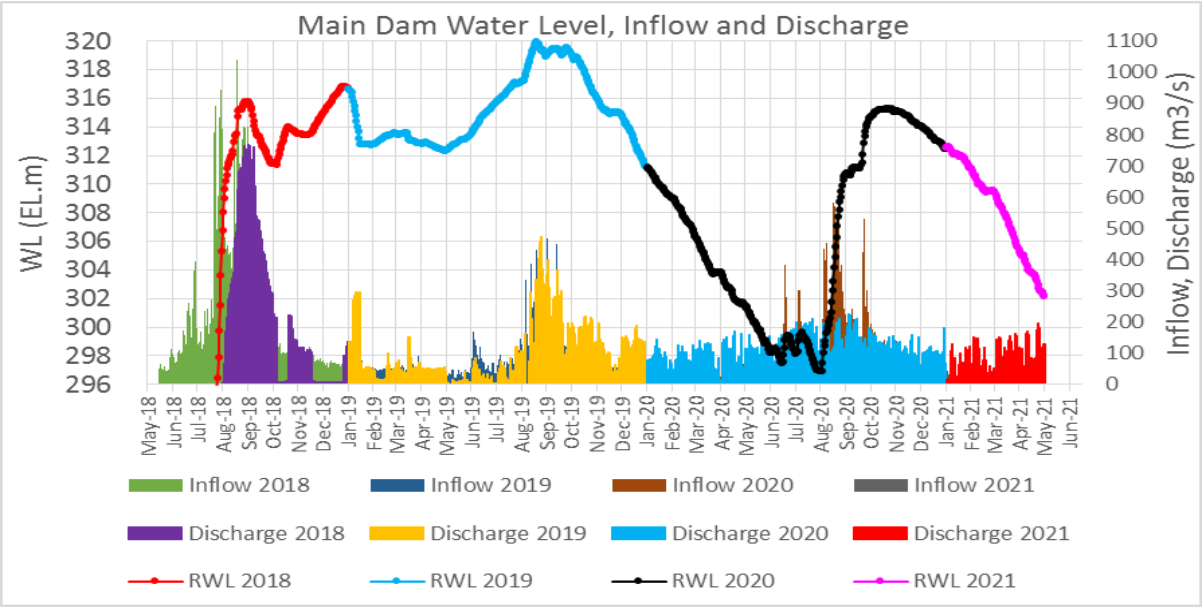
The water level in the main reservoir, inflow to the reservoir and discharge from the reservoir have been monitored since the start of the impounding on 15 May 2018. The graph in ***Figure 1-4*** presents the values recorded since May 2018.

During April 2021, the mean inflow to the main reservoir was 53 m^3/s. The minimum and maximum inflows were 38 (on 04 April 2021) and 84 m^3/s (on 19 April 2021) respectively.

From 01 to 30 April 2021, the water level of the main reservoir decreased by 3.1 m from El. 305.31 m asl to El. 302.21 m asl.

In April 2021, the turbine discharges from the Main Powerhouse varied between 60 and 232 m^3/s usually interrupted by night-time periods with no discharge.

FIGURE 1-4: WATER LEVEL, INFLOW AND DISCHARGE FOR THE MAIN RESERVOIR



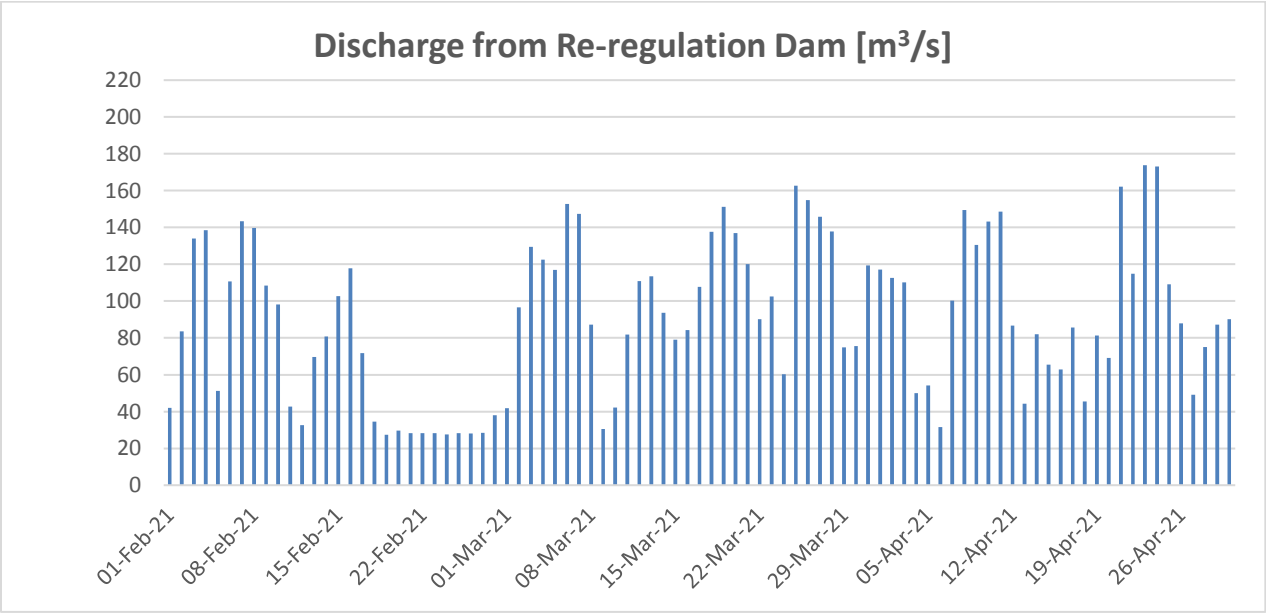
1.4.2 Re-regulation Reservoir – Discharge

The discharge monitoring data for the re-regulation dam during February to April 2021 is presented in ***Figure 1-5***.

During April 2021, the mean discharge from the Re-regulation Dam was about 109 m^3/s with turbine discharges varying between 33 m^3/s and 160 m^3/s, the gate discharge varied between 27 m^3/s and 170 m^3/s, and total discharge varying between 27 m^3/s and 233 m^3/s. The discharge was kept above the minimum flow requirement of 27 m^3/s at all times.

The changes in the discharge from the Re-regulation Dam were informed in advance to the RMU and to the heads of the downstream villages, who then announced the changes to the communities over the village speaker systems.

FIGURE 1-5: DISCHARGE MONITORING AT THE RE-REGULATION DAM IN FEBRUARY TO APRIL 2021



1.4.3 Nam Ngiep Downstream Water Depth Monitoring

In April 2021, EMO carried out four boat missions to monitor the water depth in the Nam Ngiep downstream of the Re-regulation Dam. A total of 19 sites have been identified with potential shallow water depths and in one of the four boat missions, the talweg water depth was less than 0.5 m at two of the sites (distance 2.4 and 5.6 km from the Re-regulation Dam) during the discharge of 28 m^3/s.

1.5 PROJECT WASTE MANAGEMENT

1.5.1 Solid Waste Management

In April 2021, a total of 18.2 m^3 of solid waste was disposed of at the NNP1 Project Landfill, a decrease of 2.2 m^3 compared with March 2021.

The selection of the local waste collection contractors for the project's waste and landfill operation was completed. A one-year service contract was signed with a local contractor on 05 April 2021. The waste collection and landfill operation by the contractor was resumed on 12 April 2021.

Due to the COVID19 lockdown of the site and camps, there were fewer activities and less packaging during the month. The total amount of recyclable waste collected this month is the 411 kg– see ***Table 1-10.***

TABLE 1-10: AMOUNTS OF RECYCLABLE WASTE SOLD

Source and Type of Recycled Waste		Unit	Sold	Cumulative Total by April 2021
1	Plastic bottles	kg	0	82
2	Aluminium	kg	0	40
3	Paper/Cardboard	kg	0	99
4	Glass	kg	0	190
Total		**kg**	**0**	**411**

The villagers from Phouhomxay Village collected a total of 547 kg of food waste from the OSOV1 canteen for animal feed in April 2021, a decrease of 213 kg compared with March 2021 due to the OSOV1 Lockdown from 21 April 2021 which restricts access to the site and collection of food waste.

1.5.2 Hazardous Materials and Waste Management

The types and amounts of hazardous materials and hazardous waste stored on site in April 2021 are shown in ***Table 1-11*** and ***Table 1-12.***

TABLE 1-11: RECORD OF HAZARDOUS MATERIAL INVENTORY

No.	Type of Hazardous Material	Unit	Total in April 2021 (A)	Used (B)	Remaining at the end of April 2021 (A – B)
1	Diesel	Litre	5,924	4,700	**1,224**
2	Gasoline	Litre	1,159	70	**1,089**
3	Lubricant (Turbine oil)	Litre	7,836	2	**7,834**
4	Colour Paint	Litre	250	0	**250**
5	Thinner	Litre	8	0	**8**
6	Grease Oil	Litre	160	0	**160**
7	Gear Oil	Litre	474	4	**470**
8	Chlorine Liquid	Litre	163	20	**143**
9	Chlorine Powder	kg	65	0	**65**
10	SIKA	Litre	7	0	**7**

TABLE 1-12: RECORD OF HAZARDOUS WASTE INVENTORY

No.	Hazardous Waste Type	Unit	Total in March 2021 (A)	Disposed (B)	Remaining at the end of March 2021 (A - B)
1	Used Oil (Hydraulic and Engine)	Litre	960	0	**960**
2	Used oil mixed with water	Litre	150	0	**150**
3	Empty 200L drum of used oil	Unit	2	0	**2**
4	Contaminated soil, sawdust and textile material	m^3	1.24	0	**1.24**
5	Used tires	Piece	18	0	**18**
6	Empty 20L chemical drum	Drum	10	0	**10**
7	Lead battery	Unit	5	0	**5**
8	Empty paint and spray cans	Can	139	0	**139**
9	Halogen/fluorescent bulbs	Unit	266	0	**266**
10	Empty cartridge (Ink)	Unit	192	0	**192**
11	Clinic Waste	kg	1.5	0	**1.5**

1.6 COMMUNITY WASTE MANAGEMENT

1.6.1 Community Recycling Programme

In April 2021, there was no trading of recyclable waste at the community waste bank. Due to the continuation of COVID19 measures, many local recycling businesses and vendors have not yet resumed their recyclable waste trading.

The total amount of recyclable waste in the waste bank is 2,519 kg - same as the amount recorded in March 2021.

TABLE 1-13: TYPES AND AMOUNTS OF RECYCLABLE WASTE TRADED AT THE COMMUNITY RECYCLE WASTE BANK

Types of Waste	Unit	Remaining in March 2021	Additional in April 2021	Sold/ dispose	Remaining in April 2021
Glass bottles	kg	2,358	0	0	**2,358**
Paper/ cardboard	kg	126	0	0	**126**
Plastic bottles	kg	35	0	0	**35**
Aluminium cans	kg	0	0	0	**0**
Scrap metal	kg	0	0	0	**0**
Total	**kg**	**2,519**	**0**	**0**	**2,519**

1.6.2 Community Solid Waste Management

In April 2021, approximately 28.1 m^3 of solid waste was collected from Phouhomxay Village and the host villages for disposal at the Houay Soup Landfill, an increase of 13.2 m^3 compared with March 2021.

The selection of the local waste collection contractor for the communities' waste and Houay Soup landfill operation was completed. A one-year service contract was signed with a local contractor on 05 April 2021. The community waste collection and Houay Soup landfill operation by the local contractor was resumed on 13 April 2021.

FIGURE 1-6: WASTE MANAGEMENT ACTIVITIES DURING APRIL 2021

THE WASTE DELIVERY FROM THE VILLAGES	*WASTE SEGREGATION AT HOUY SOP LANDFILL*
	

2. WATERSHED AND BIODIVERSITY MANAGEMENT

2.1 WATERSHED MANAGEMENT

2.1.1 Implementation of Annual Implementation Plan (AIP) 2020

Xaysomboun WRPO submitted a monthly progress report for January and February 2021 at the end of April 2021.

The construction of the sub-office for Xaysomboun WRPO at Ban Houay Xay, Hom District under the approved AIP2020 continues to progress in April 2021.

Bolikhamxay WRPO conducted forest patrol at the end of March to early April 2021 and found illegal farming within NNP1 concession area. EMO has informed and coordinated with SMO team and relevant GOL offices at the end of April 2021 for them to follow-up and take action.

The camera-trap installation within NNP1 watershed TPZ is still postponed because the relevant GOL committees have not yet come to an agreement about the accommodation allowance for the field work in the forest area.

EMO organized further discussions with Bolikhamxay Agriculture and Forestry College on 22 April 2021 for providing training courses on the land-use and forest resources management to WRPO and GOL staff based on the training need assessment and training proposal reviewed in March 2021.

The EMO team prepared a ToR for a Short-term Individual Consultant to support implementing the Action Plan on Sustainable Livelihood Opportunities under component 6 of the approved WMP. The EMO and SMO Team discussed the ToR on 06 April 2021 and noted that the SMO Team is unable to provide full support because of their commitments on the SMO milestones and there are no qualified staff as per the required ToR. The SMO Team also agreed to outsource the consultancy service and they can provide support in delivering a training course that related to their field of expertise.

2.1.2 Preparation of Annual Implementation Plan (AIP) 2021

The EMO Team followed up with Bolikhamxay WRPO and noted that they have submitted the draft AIP2021 to DOF-MAF at the end of March 2021. The EMO Team followed up with DOF-MAF in the middle of April 2021 and noted that they are still reviewing the draft AIP2021 of Bolikhamxay WRPO and will discuss further with both WRPOs about the allowance issue.

The EMO Team followed up with Xaysomboun WRPO and noted that they are still finalizing their draft AIP2021, which also depends on the final decision about allowances.

ESD and EMO management followed up with Director General of DOF-MAF and provincial management of both provinces at the end of April 2021 on the allowance issue and noted that they will coordinate further with relevant GOL committees before returning to NNP1PC.

EMO, ADB, and BSP-WCS organized the first MOU meeting on 05 April 2021 that also discussed the concern about allowances. However, the matter could not be settled at the end of April 2021 as expected and EMO will continue to follow up and inform ADB and BSP-WCS accordingly in early May 2021. The work progress is also subject to the GOL preventive measures for COVID-19 issued on 21 April 2021 which limit travelling, face-to-face interaction and field work.

2.2 BIODIVERSITY OFFSET MANAGEMENT

2.2.1 Implementation of BOMP Annual Implementation Plan (AIP) 2019 and 2020

The progress on the implementation of key activities by Component in April 2021 are described below:

a. Component 1 - Spatial Planning and Regulation

NC-NX BOMU confirmed that they still could not finalize the TPZ boundary demarcation in the remaining village, Ban Vangphieng of Viengthong district due to the unavailability of NC-NX BOMU and relevant GOL staffs.

b. Component 2 – Law Enforcement

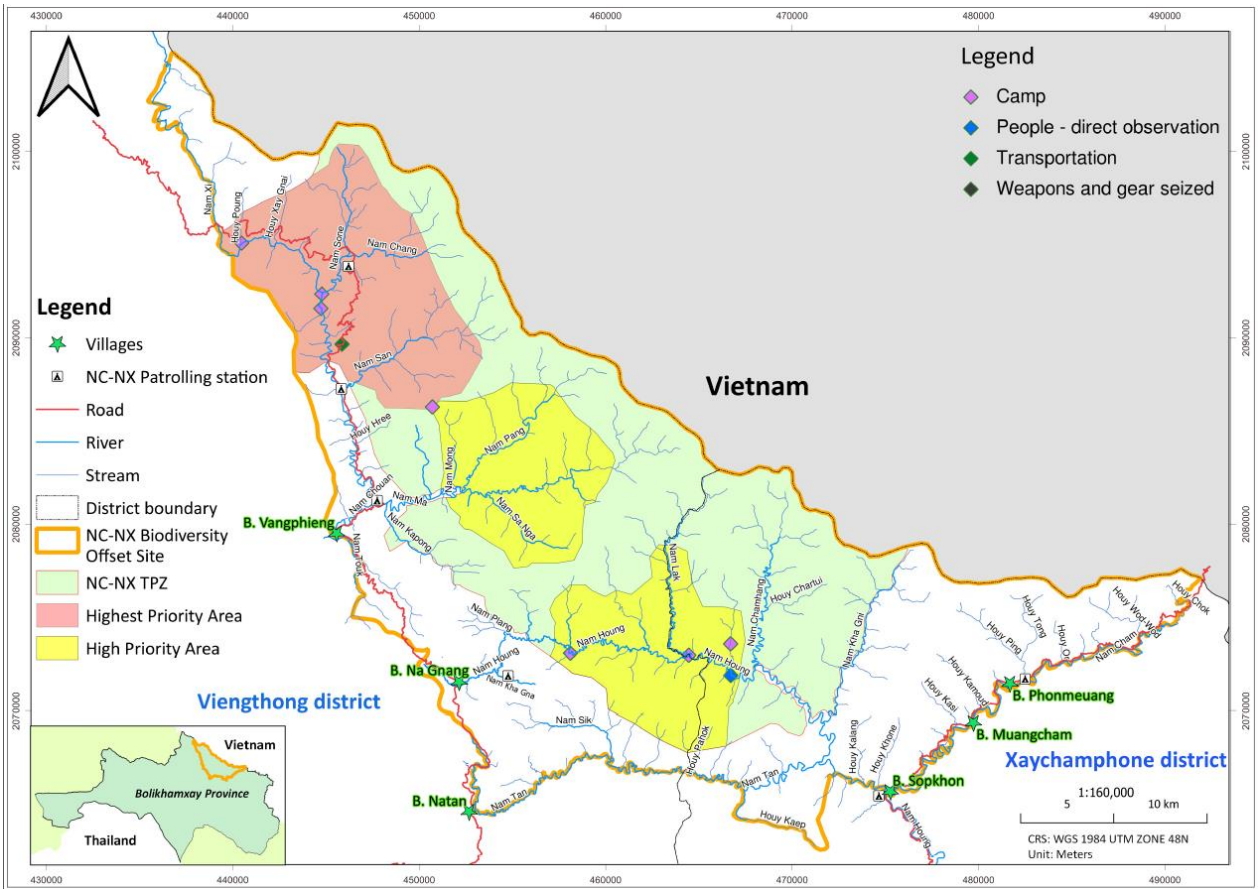
The four patrol teams continued the patrolling between 20 April 2021 and 14 May 2021 in which three teams focused on TPZ Highest priority area and one team focused on Nam Houng TPZ High priority area. The results of patrolling in April 2021 will be presented and discussed in May 2021 Monthly Report. EMO team is proposing to BOMU for the patrolling work to be continued according to the schedule during the COVID-19 lockdown period because the team and activity are not within the COVID-19 outbreak or risk areas.

The results of patrolling activity in March 2021 are as follows:

Team	Patrolling Area/distance	Observations/Actions Taken
1	TPZ highest priority area including Nam Chouan, Nam Sone and Houay Xay Gnai (12 days covering a distance of 65 km on forest patrolling and 12 km on road patrol)	The team encountered and destroyed three new fishing camps at Nam Chouan. The team also observed three motorbikes entering TPZ highest priority area for fishing.
2	TPZ high priority area including Nam Houng, Nam Lak and Houay Kasae & mountain ridge (16 days covering a distance of 92 km on forest patrolling)	The team encountered and destroyed a hunting camp at Houay Kasae and three fishing camps at Houay Kapa & Houay Bon. The team also encountered six men illegally fishing at Nam Houng within the TPZ area. The fishing gears were seized and a written warning was issued to them. The team also found a carcass of wild pig at Houay Kasae but they could not identify the cause of the death.
3	TPZ highest priority area including Nam San & Nam San tributaries, Nam Phai and mountain ridges. (12 days covering a distance of 53 km on forest patrolling)	The team encountered and destroyed an old hunting camp located between Nam Mong mountain ridge and Nam Phai.
4	TPZ highest priority at Nam San including streams and mountain ridges.	The team did not encounter any threats during patrolling.

Team	Patrolling Area/distance	Observations/Actions Taken
	(12 days covering a distance of 46 km on forest patrolling)	

FIGURE 2-1: MAP OF THREATS RECORDED BY PATROLLING TEAMS IN MARCH 2021



Remark: ***Transportation*** refers to access by local people using motorbike to the TPZ area as observed by patrolling team.

FIGURE 2-2: ILLEGAL FISHING FOUND BY TEAM 2 AT NAM HOUNG	*FIGURE 2-3: OLD HUNTING CAMP LOCATED BETWEEN NAM MONG MOUNTAIN RIDGE AND NAM PHAI*
	

c. Component 3 – Conservation Outreach

BSP presented the results from outreach training and the plan to conduct the outreach campaign at the village during the monthly meeting on 07 April 2021. EMO and NC-NX BOMU provided more comments to BSP for consideration and further revision especially for the activities identified in the 5-years outreach plan as well as the agenda and materials for 2021 outreach campaign. BOMU will check the remaining budget from AIP 2020 and communicate with all parties to move forward in implementing the activity plan while AIP 2021 is still being finalized.

d. Component 4 – Conservation linked livelihood development

The Lao version of CDP was finalized on 22 February 2021 and submitted to NC-NX BOMU for their final review.

The official documents from district authority to endorse the village team and committee of snare removal as well as their specific ToRs were issued at the end of April 2021. The EMO team proposed to BOMU that the snare removal activities could be implemented as scheduled during the COVID-19 lockdown, because the activities are not within the COVID-19 outbreak or risk areas.

e. Component 6 – Biological Monitoring

The draft ToR for Lao Newt and Bent-toe gecko survey in the NNP1 sub catchment, Otter survey in the NC-NX, and fish survey for the sub-catchment and NC-NX were being reviewed by ADB and IAP at the end of April 2021. Further procurement of the experts/specialists for the survey under NNP1 NNL fund will be processed after ADB and IAP acknowledgement.

2.2.2 Preparation of Annual Implementation Plan (AIP) 2021

The workshop among EMO, NC-NX BOMU, and BSP to clarify the comments on AIP2021 and finalize the activity schedule and budget partition in quarterly basis that was originally scheduled on 07 April 2021 was postponed to May 2021. It refers to the advice from Bolikhamxay PAFO management following the GOL preventive measures nationwide for COVID-19 issued on 21 April 2021 that limit

travelling and face-to-face interaction as well as the unreadiness for BOMU team and relevant GOL office to organize online meetings.

The first MOU Meeting between NNP1, ADB, and BSP-WCS was organized on 05 Apr 2021 through online platform attended by 2 NNP1 EMO representatives, 1 ADB representative, and 4 BSP-WCS representatives. The meeting discussed and agreed on:

1) *Updates on the finalization of 2021 AIPs for WRPOs and BOMU and unresolved allowance issues for the Sub-catchment* – implications for monitoring and other activities - NNP1 aims to settle the discussion with GOL within April 2021.
2) *Update on security situation in Xaysomboun and protocols for communicating future issues* -ADB advised to have a documented protocol prepared and circulated to all teams. BSP will circulate the draft protocol to ADB and NNP1PC in the third week of April 2021 and communicate further with GOL implementing units and relevant parties.
3) *Cattle in the highest priority area and law enforcement issues at NC-NX* - the full detailed report will be prepared by BSP team and shared with NNP1PC and ADB after further discussion with NC-NX BOMU during monthly patrolling meeting.
4) *Disclosure of basic engagement information regarding the NNP1-ADB-WCS engagement* - The clause 5 of the MOU will be further discussed and communicated through email for clarity.
5) *Recap of 'Urgent' Issues Identified under the IAP Mission* - the progress related with law enforcement and patrolling in the NNP1 watershed and NC-NX offset site are noted by all parties.
6) *Biological monitoring in NNP1 watershed and NC-NX offset site*
   (i) BSP will provide clarification on the ADB comments and the TOR could be finalized after that; and
   (ii) The procurement process could be started after the confirmation of no objection by ADB on the final TOR.
7) *About NNL auditor*
   (i) ADB will share the initial idea about the scope of work of NNL auditor based on the recommendation from ADB experts;
   (ii) BSP and EMO proposed to consider the expert that have regional knowledge and understand the local context. The consideration could be further discussed after TOR is finalized; and
   (iii) The auditing work could start in late 2022 considering the current situations, delayed in AIP implementation and competition of key biological monitoring survey.
8) *Schedule of MOU meeting*
   (i) It is agreed to be organized at quarterly basis, the next meeting is scheduled in July 2021; and
   (ii) In case of urgent matter, all three parties could also call for an ad-hoc discussion but it is not an MOU meeting.

3. FISHERY MONITORING

The results of fishery monitoring for March and April 2021 will be reported in May 2021 due to late completion in data collection related with the COVID-19 lockdown.

ANNEXES

ANNEX A: RESULTS OF WATER QUALITY MONITORING

TABLE A-1: RESULTS OF MAIN RESERVOIR, RE-REGULATION RESERVOIR AND SURFACE WATER (NAM NGIEP RIVER) QUALITY MONITORING

		River Name	Nam Ngiep											
		Zone	Location Refer to Construction Sites											
			Upstream/Main Reservoir						Within / Re-regulation Reservoir		Downstream			
		Station Code	NNG 01	R01	R02	R03	R04	R05	R06	R07	NNG 05	NNG 06	NNG 07	NNG 08
Date	Parameters (Unit)	Guideline												
5-Apr-21	pH	5.0 - 9.0	7.35											
6-Apr-21	pH	5.0 - 9.0					6.76	6.82						
7-Apr-21	pH	5.0 - 9.0							6.44	6.56	6.38	6.62	6.29	6.18
12-Apr-21	pH	5.0 - 9.0							6.6	6.77	6.55	6.88	7.12	7.12
13-Apr-21	pH	5.0 - 9.0					6.73	6.58						
20-Apr-21	pH	5.0 - 9.0							6.19	6.27	6.41	6.57	6.67	6.58
21-Apr-21	pH	5.0 - 9.0					6.49	6.73						
27-Apr-21	pH	5.0 - 9.0					6.49	6.78						
28-Apr-21	pH	5.0 - 9.0							6.46	6.73	6.49	6.58	6.49	6.39
5-Apr-21	Sat. DO (%)		100.4											
6-Apr-21	Sat. DO (%)						111.3	113.1						
7-Apr-21	Sat. DO (%)								10.9	22.3	37.2	46	67.9	80.9
12-Apr-21	Sat. DO (%)								44.8	45.7	105.5	86.1	80.8	88.9
13-Apr-21	Sat. DO (%)						102.8	109.6						
20-Apr-21	Sat. DO (%)								24.3	20.6	42	45.2	63.4	76.6
21-Apr-21	Sat. DO (%)						101.9	102.1						
27-Apr-21	Sat. DO (%)						90.9	91						
28-Apr-21	Sat. DO (%)								16.9	38.2	32	39.8	77.8	87.7
5-Apr-21	DO (mg/L)	>6.0	7.61											
6-Apr-21	DO (mg/L)	>6.0					8.66	8.73						
7-Apr-21	DO (mg/L)	>6.0							0.94	1.92	3.2	3.89	5.69	6.73
12-Apr-21	DO (mg/L)	>6.0							3.76	3.65	8.73	7.03	6.51	7.11
13-Apr-21	DO (mg/L)	>6.0					7.98	8.52						
20-Apr-21	DO (mg/L)	>6.0							2.03	1.75	3.6	3.8	5.23	6.2
21-Apr-21	DO (mg/L)	>6.0					7.86	7.86						
27-Apr-21	DO (mg/L)	>6.0					6.95	6.96						
28-Apr-21	DO (mg/L)	>6.0							1.43	3.14	2.69	3.29	6.41	7.03
5-Apr-21	Conductivity (µs/cm)		112											
6-Apr-21	Conductivity (µs/cm)						68	68						
7-Apr-21	Conductivity (µs/cm)								78	77	75	75	73	72
12-Apr-21	Conductivity (µs/cm)								74	73	72	74	73	72
13-Apr-21	Conductivity (µs/cm)						68	67						
20-Apr-21	Conductivity (µs/cm)								75	75	74	76	74	73
21-Apr-21	Conductivity (µs/cm)						67	67						
27-Apr-21	Conductivity (µs/cm)						68	67						
28-Apr-21	Conductivity (µs/cm)								74	72	73	73	76	73

		River Name	Nam Ngiep											
		Zone	Location Refer to Construction Sites											
			Upstream/Main Reservoir						Within / Re-regulation Reservoir		Downstream			
		Station Code	NNG 01	R01	R02	R03	R04	R05	R06	R07	NNG 05	NNG 06	NNG 07	NNG 08
Date	Parameters (Unit)	Guideline												
5-Apr-21	Temperature (°C)		27.3											
6-Apr-21	Temperature (°C)						28.34	28.82						
7-Apr-21	Temperature (°C)								23.08	23.14	23.33	23.84	24.3	24.71
12-Apr-21	Temperature (°C)								24.54	27.42	24.9	25.67	26.36	27.15
13-Apr-21	Temperature (°C)						28.42	28.38						
20-Apr-21	Temperature (°C)								23.36	23.34	23.72	24.1	24.66	26.05
21-Apr-21	Temperature (°C)						28.78	28.87						
27-Apr-21	Temperature (°C)						29.31	29.37						
28-Apr-21	Temperature (°C)								23.45	25.04	24.21	24.67	25.87	26.82
5-Apr-21	Turbidity (NTU)		22.32											
6-Apr-21	Turbidity (NTU)						1.48	1.58						
6-Apr-21	Turbidity (NTU)-hypolimnion						1.31	1.17						
7-Apr-21	Turbidity (NTU)								0.49	2.44	2.48	4.81	4.21	6.8
12-Apr-21	Turbidity (NTU)								2.75	3.45	2.47	2.8	3.76	4.36
13-Apr-21	Turbidity (NTU)						2.34	2.59						
27-Apr-21	Turbidity (NTU)						0.96	0.68						
28-Apr-21	Turbidity (NTU)								0.72	1.64	1.89	1.8	1.85	2.04
5-Apr-21	TSS (mg/L)		45.77											
6-Apr-21	TSS (mg/L)						<5	<5						
6-Apr-21	TSS (mg/L)-hypolimnion						<5	<5						
7-Apr-21	TSS (mg/L)						<5	<5	<5	<5	31	32.53	22.4	47.7
5-Apr-21	BOD_5 (mg/L)	<1.5	<1											
6-Apr-21	BOD_5 (mg/L)	<1.5					<1	<1						
6-Apr-21	BOD_5 (mg/L)-hypolimnion						<1	<1						
7-Apr-21	BOD_5 (mg/L)	<1.5							4.92	2.16	1.25	<1	<1	<1
7-Apr-21	COD (mg/L)	<5.0							13.1	13.9	9.8	19.6	10.6	15
6-Apr-21	NH_3-N (mg/L)	<0.2					<0.2	<0.2						
6-Apr-21	NH_3-N (mg/L)-hypolimnion						0.21	<0.2						
6-Apr-21	NO_3-N (mg/L)	<5.0					<0.02	<0.02						
6-Apr-21	NO_3-N (mg/L)-hypolimnion						<0.02	<0.02						
5-Apr-21	Faecal coliform (MPN/100 mL)	<1,000	350											
6-Apr-21	Faecal coliform (MPN/100 mL)	<1,000					0	0						
6-Apr-21	Faecal coliform (MPN/100 mL)-hypolimnion						0	0						
7-Apr-21	Faecal coliform (MPN/100 mL)	<1,000							0	5	0	5	22	170
5-Apr-21	Total Coliform (MPN/100 mL)	<5,000	1,600											
6-Apr-21	Total Coliform (MPN/100 mL)	<5,000					2	0						
6-Apr-21	Total Coliform (MPN/100 mL)-hypolimnion						0	0						

		River Name	Nam Ngiep											
		Zone	Location Refer to Construction Sites											
			Upstream/Main Reservoir						Within / Re-regulation Reservoir		Downstream			
		Station Code	NNG 01	R01	R02	R03	R04	R05	R06	R07	NNG 05	NNG 06	NNG 07	NNG 08
Date	Parameters (Unit)	Guideline												
7-Apr-21	Total Coliform (MPN/100 mL)	<5,000							0	8	220	79	240	1,600
6-Apr-21	TKN						<1.5	<1.5						
7-Apr-21	TOC (mg/L)								1.27	1.21	1.49	1.61	1.58	1.58
6-Apr-21	Phytoplankton Biomass (g dry wt/m³)						2	2.8						
6-Apr-21	Phytoplankton Biomass (g dry wt/m³)-hypolimnion						4.2	2.8						
6-Apr-21	Total Phosphorus (mg/L)						<0.01	<0.01						
6-Apr-21	Total Phosphorus (mg/L)-hypolimnion						<0.01	<0.01						
6-Apr-21	Total Dissolved Phosphorus (mg/L)						<0.01	<0.01						
6-Apr-21	Total Dissolved Phosphorus (mg/L)-hypolimnion						<0.02	<0.01						
6-Apr-21	Hydrogen Sulfide (mg/L)						<0.02	<0.02						
6-Apr-21	Hydrogen Sulfide (mg/L)-hypolimnion						<0.02	<0.02						

TABLE A-2: RESULTS OF SURFACE WATER QUALITY MONITORING IN NAM CHIAN, NAM PHOUAN, NAM XAO AND NAM HOUAY SOUP

		River Name	Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites			
			Tributaries Upstream		Tributaries Downstream	
		Station Code	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline				
5-Apr-21	pH	5.0 - 9.0	7.55			
7-Apr-21	pH	5.0 - 9.0			7.31	7.1
12-Apr-21	pH	5.0 - 9.0			7.48	7.16
20-Apr-21	pH	5.0 - 9.0			7.51	7.4
28-Apr-21	pH	5.0 - 9.0			7.15	6.88
5-Apr-21	Sat. DO (%)		96.6			
7-Apr-21	Sat. DO (%)				76	65.7
12-Apr-21	Sat. DO (%)				120.5	97.6
20-Apr-21	Sat. DO (%)				91.1	78.6
28-Apr-21	Sat. DO (%)				89.1	74.8
5-Apr-21	DO (mg/L)	>6.0	7.81			
7-Apr-21	DO (mg/L)	>6.0			5.45	5.22
12-Apr-21	DO (mg/L)	>6.0			8.84	7.5
20-Apr-21	DO (mg/L)	>6.0			6.89	6.66
28-Apr-21	DO (mg/L)	>6.0			6.5	6.24
5-Apr-21	Conductivity (µs/cm)		41			
7-Apr-21	Conductivity (µs/cm)				141	48
12-Apr-21	Conductivity (µs/cm)				138	56
20-Apr-21	Conductivity (µs/cm)				165	62
28-Apr-21	Conductivity (µs/cm)				128	67
5-Apr-21	Temperature (°C)		23.4			
7-Apr-21	Temperature (°C)				28.13	27.1
12-Apr-21	Temperature (°C)				31.77	28.86
20-Apr-21	Temperature (°C)				29.1	28.26
28-Apr-21	Temperature (°C)				27.46	26.44
5-Apr-21	Turbidity (NTU)		2.54			
7-Apr-21	Turbidity (NTU)				3.83	2.35
12-Apr-21	Turbidity (NTU)				3.2	1.99
28-Apr-21	Turbidity (NTU)				2.14	2.48
5-Apr-21	TSS (mg/L)		5.8			
7-Apr-21	TSS (mg/L)				<5	<5
5-Apr-21	BOD_5 (mg/L)	<1.5	<1			
7-Apr-21	BOD_5 (mg/L)	<1.5			<1	<1
7-Apr-21	COD (mg/L)	<5.0			16.3	13.7
5-Apr-21	Faecal coliform (MPN/100 mL)	<1,000	1,600			
7-Apr-21	Faecal coliform (MPN/100 mL)	<1,000			130	140
5-Apr-21	Total Coliform (MPN/100 mL)	<5,000	1,600			
7-Apr-21	Total Coliform (MPN/100 mL)	<5,000			1,600	140
7-Apr-21	TOC (mg/L)				2.6	2.56

TABLE A-3: RESULTS OF CAMP EFFLUENTS IN APRIL 2021

	Site Name	OSOV1 (Owner's Site Office and Village)		OSOV2 (ESD Camp)		Main Powerhouse	
	Station Code	EF01		EF13		EF19	
	Date	01-Apr-21	19-Apr-21	01-Apr-21	19-Apr-21	01-Apr-21	19-Apr-21
Parameters (Unit)	**Guideline**						
pH	6.0 - 9.0	6.79	6.28	6.92	6.92		6.55
Sat. DO (%)		56.1	57.3	74.4	51.2		42.1
DO (mg/L)		4.39	4.51	5.41	3.92	No	3.13
Conductivity (µs/cm)		454	452	522	921	discharge	1,006
TDS (mg/L)		227	226	261	460.5		503
Temperature (°C)		27.93	27.64	30.2	28.32		31.2
Turbidity (NTU)		1.8	0.47	19.39	7.11		36.7
TSS (mg/L)	<50	<5	<5	16.2	12.2		200.0
BOD_5 (mg/L)	<30	<6	<6	<6	<6		9.3
COD (mg/L)	<125	<25	<25	81	25		313
NH_3-N (mg/L)	<10.0	5	2	17.3	18.4		22.3
Total Nitrogen (mg/L)	<10.0	11.8	5.41	28	22		28
Total Phosphorus (mg/L)	<2	1.38	1.38	1.35	1.76		6.41
Oil & Grease (mg/L)	<10.0	<1		4			
Total coliform (MPN/100 mL)	<400	7	14	0	0		0
Faecal Coliform (MPN/100 mL)	<400	0	2	0	0		0
Effluent Discharge Volume (L/mn)		5	4	4	3		1600
Chlorination Dosing Rate (mL/mn)		n/a	n/a	30.00	39.00		400
Residual Chlorine (mg/L)	<1.0	n/a	n/a	0.26	1.76		0.98