NAM NGIEP 1
POWER COMPANY

Nam Ngiep 1 Hydropower Project

Environmental Management Monthly Monitoring Report

February 2016

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BBREVIATIONS / ACRONYMS

ADB	Asian Development Bank
BBS	Biodiversity Baseline Survey
BOD	Biochemical Oxygen Demand
BOF	Biodiversity Offset Framework
BODM	Board of Directors Meeting
BRP	Biomass Removal Plan
CA	Concession Agreement between the NNP1PC and GOL,
CAP	Corrective Action Plan
COD	Commercial Operation Date
CVC	Conventional Concrete
CWC	Civil Works Contract
DAS	Document Approval Sheet
DCC	District Coordination Committees
DEQP	Department of Environmental Quality Promotion, MONRE
DESIA	Department of Environmental and Social Impact Assessment, MONRE
DFRM	Department of Forest Resources Management, MONRE
ECZ	Elephant Conservation Zone
EdL	Electricite du Laos
EIA	Environmental Impact Assessment
EMO	Environmental Management Office of ESD within NNP1PC
EMU	Environmental Monitoring Unit
EMWC	Electrical-Mechanical Works Contract
EPF	Environmental Protection Fund
ERIC	Environmental Research Institute of Chulalongkhorn University
ERM	Environmental Resource Management
ESD	Environmental and Social Division of NNP1PC
ESMMP	Environmental and Social Monitoring and Management Plan
GOL	Government of Lao PDR
GIS	Geographic Information Systems
IEE	Initial Environmental Examination
IMA	Independent Monitoring Agency

INRMP	Integrated Natural Resources Management Plan
ISP	Integrated Spatial Planning
LTA	Lender's Technical Advisor
MoM	Minutes of Meeting
MoNRE	Ministry of Natural Resource and Environment, Lao PDR
NCR	Non-Compliance Report
NNP1PC	Nam Ngiep 1 Power Company Limited
NPF	National Protection Forest
NTFP	Non-Timber Forest Products
NTP	Notice to Proceed (under each construction contract)
NVDI	Normalised Difference Vegetation Index
OC	Obayashi Corporation
ONC	Observation of Non-Compliances
PONRE	Provincial Department of Natural Resource and Environment, MONRE
PRLRC	Provincial Resettlement and Livelihood Restoration Committee
PvPA	Provincial Protection Area
RCC	Roller Compacted Concrete
ROW	Right of Way
SLBMP	Salvage Logging Biomass Management Plan
SMO	Social Management Office of ESD within NNP1PC
SS-ESMMP	Site Specific Environmental and Social Monitoring and Management Plan
TL	Transmission Line(s)
TLWC	Transmission Line Works Contract
ToR	Terms of Reference
TSS	Total Suspended Solids
USD	US Dollar
UXO	Unexploded Ordinance
WMC	Watershed Management Committee
WMF	Watershed Management Fund
WMP	Watershed Management Plan
WWTS	Waste Water Treatment System

EXECUTIVE SUMMARY

Actual overall cumulative work progress by value was 33.0% at the end of February 2016 based on achieved Interim Milestone Payments for all Contracts excluding the value of Advance Payments. For the progress of Civil Works until the end of February 2016 was 41.9%. calculated in the same manner as described above for the value of achieved Interim Milestone Payments excluding advance payment. While the diversion tunnel was completed and the Nam Ngiep River diverted on 31 October 2015 about a month ahead of schedule, progress of critical work such as the re-regulating dam structure and the main dam and powerhouse excavation continue to be the same or better than planned. These activities are progressing to schedule despite increased quantities of dam excavation and slope stabilization and the Civil Works overall can be considered to be on schedule.

Regarding the compliance and environmental monitoring related activities, during February 2016, the number of new ONCs was reduced from 18 to 8. With a carry-over from January 2016, a total of 27 ONCs and 1 NCR were active. Out of which, 17 ONCs and 1 NCR were resolved by the end of February 2016. Thus, a total of 10 ONCs will be carried over into March 2016.

The bids for the construction of the Project landfill have been opened and evaluated. The contract is expected to be signed in March 2016 and actual construction is expected to commence in the beginning of April 2016.

The effluents from the camps remain an outstanding issue in February 2016. The effluents from most of the camps, except from the Sinohydro camp, were found to contain significantly high levels of total and faecal coliforms. Upgrades of these three priority camps' WWTSs were ongoing.

The level of dust emissions at the aggregate crushing plant was significantly reduced to below the National Standard after the application of additional sprinklers and reduction in crushing activities.

During February 2016, the noise level in villages of Ban Hat Gnuin and Hatsaykham was below the Standard. Similarly, the noise level at most construction sites was lower than the Standard except at the RCC plant, main dam and Sinohydro camp which were slightly above the Standard during 22:00-06:00. The EMO team visited these sites in mid-February to identify the sources of this surpass during the mentioned period. It was found that the windy condition during this time was the cause.

Based on funds disbursed in January 2016 by NNP1PC from the Watershed Management Fund, the Watershed Management Offices have initiated priority activities.

The ISP planning process continued in Thathom District. DEQP plans to complete the District planning work for Hom and Anouvong Districts together with the other two districts outside NNP1 watershed area (Longcheng and Longxan) in the second week of March 2016.

During 8 to 11 February 2016, NNP1PC EMO Team together with Bolikhamxay PoNRE conducted a coordination workshop with Xaychomphone and Viengthong Districts and Village authorities on the commencement of ground truth survey in the Nam Mouane Watershed Area. The survey team started the field work on 23 February 2016 and is expected to deliver an inception report in March 2016.

Regarding the biomass clearance, the Xaysomboun Provincial Authorities approved the NNP1PC Contractor Implementation Plan and will issue an official notification to allow NNP1PC to commence the biomass clearance work.

The EMU of Bolikhamxay Province visited the NNP1 Project site from 17-19 February 2016 to follow-up on the environmental concerns raised during their mission in January 2016; the EMU found that most of the issues have been resolved. During the mission in February, the EMU raised the following key environmental concerns: i) a drainage system at the workshop area of the bridge construction work and ii) the sediment

pond of the SongDa#02 camp. The EMO acknowledged these concerns and will continue to monitor the corrective actions and report back to the EMU in March 2016.

1 INTRODUCTION

1.1 Project Overview

The Nam Ngiep originates in the mountains of Xieng Khouang Province, flowing through Khoun District into Thathom District of Xaysomboun Province, through Hom District and into Bolikhan District of Bolikhamxay Province. The Nam Ngiep meets the Mekong River just upstream from Pakxan in Bolikhamxay Province (Fig. 1).

The project will consist of two dams. The main dam which is located 9.0 km upstream of Hat Gnuin Village in Bolikhan District, will create a 70-km-long, narrow reservoir that extends up the Ngiep Valley as far as Thathom District. At almost 150 m high, the main dam will be the second largest in Lao PDR. The Power Station at this dam will generate up to 272 MW of electricity for export to Thailand. With a combined capacity of 290 MW, Nam Ngiep 1 will generate around 1,620 GWh of electricity annually. Two transmission lines will be required to transport the electricity generated by the project. From the main power station a 230-kV line will run for 125 km to the Nabong outside Vientiane Capital. A 115-kV transmission line will be constructed by EDL from the Re-regulation Power Station to Pakxan substation over a distance of 40 km.

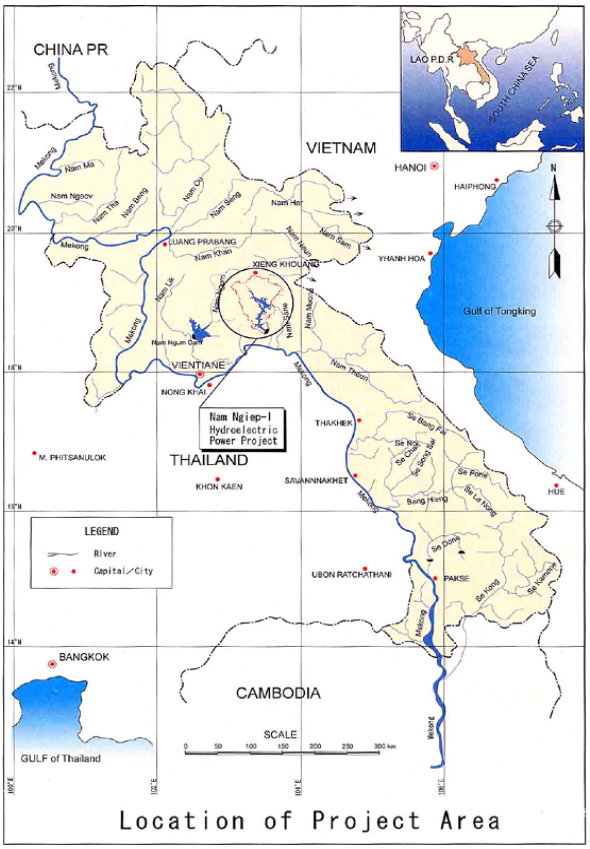


FIG. 1: LOCATION MAP

This Environmental Monthly Monitoring Report (EMMR) provides a summary of environmental monitoring activities and mitigation actions in February 2016. The EMMR was prepared by the Project's Environmental Management Office (EMO). It has been internally reviewed and cleared by EMO senior technical staff and management prior to submitting the report to the Government of Lao PDR (GoL) related agencies.

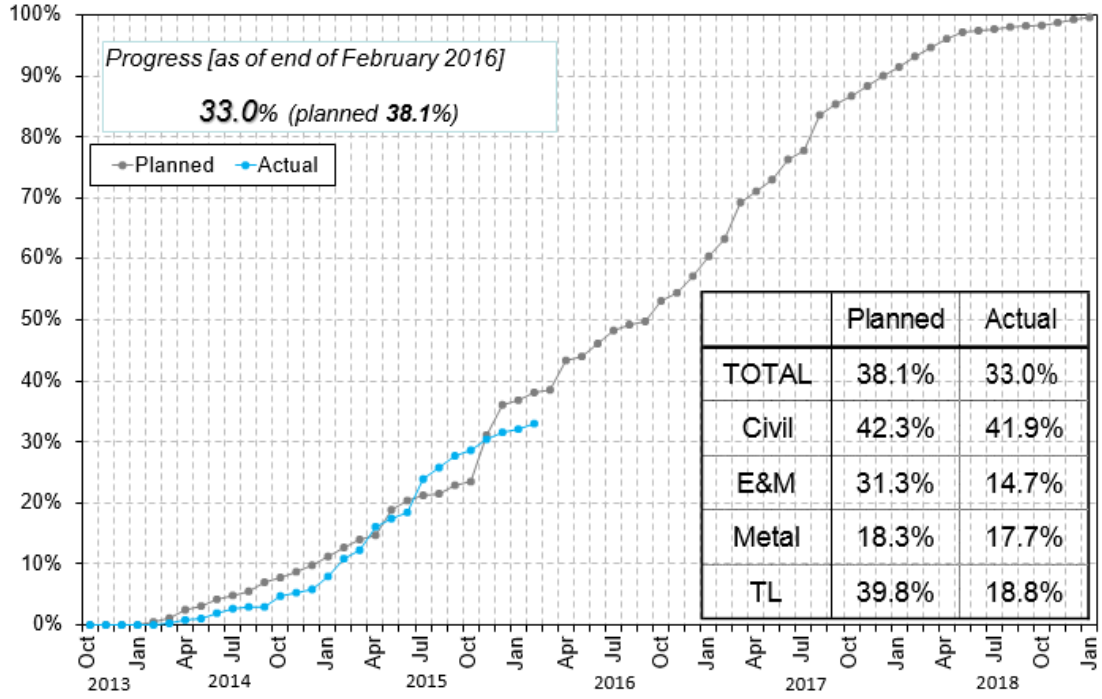
The EMMR and other related reports including related construction Site Specific Environmental and Social Monitoring and Management Plans (SS-ESMMPs) are publically disclosed on the Project website in line with the ADB and GoL Public Disclosure Policies. Hard copies of the final reports will also be available upon requests at the Project's main office in Vientiane Capital and field office in Pakxan, Bolikhamxay Province.

1.2 Work Progress of Principal Contractor

Actual overall cumulative work progress until the end of February 2016 was 33.0% (compared to planned progress of 38.1%), based on achieved Interim Milestone Payments for all Contracts excluding the value of Advance Payments. In terms of the value of actual work done the percentage is slightly understated since work completed, but not paid, is not included.

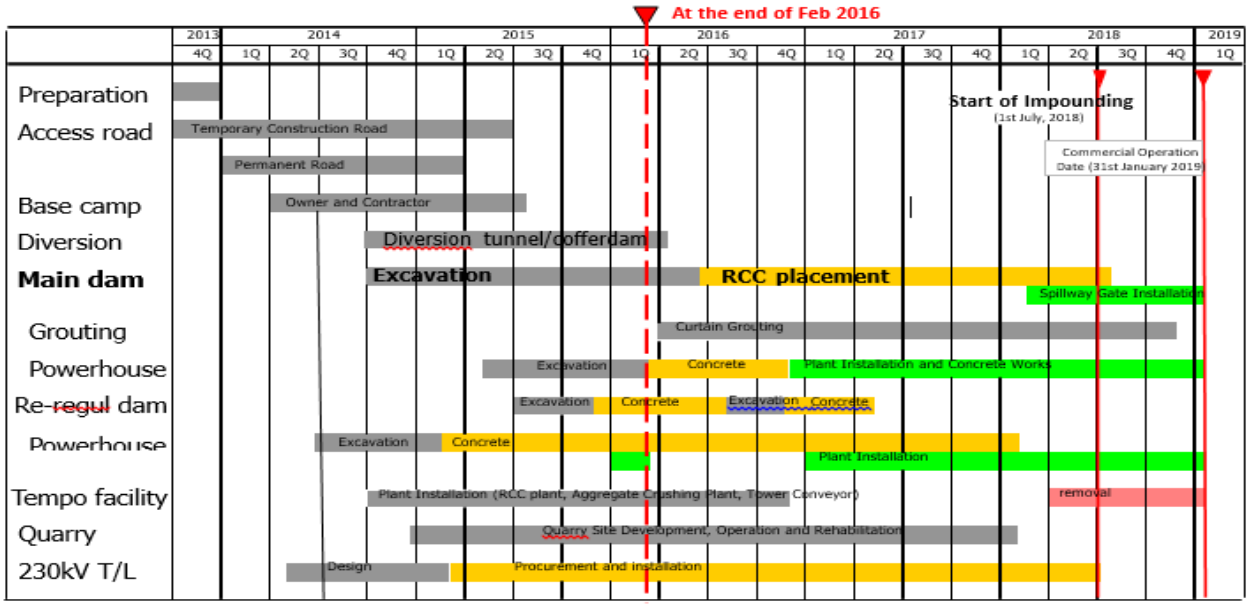
The overall construction schedule and progress curve (by achieved Milestone Payments) are shown in Fig. 2 and 3 below

FIG. 2: OVERALL CONSTRUCTION SCHEDULE



	Planned	Actual
TOTAL	38.1%	33.0%
Civil	42.3%	41.9%
E&M	31.3%	14.7%
Metal	18.3%	17.7%
TL	39.8%	18.8%

FIG. 3: PROGRESS CURVE (ALL CONSTRUCTION WORKS)



Civil Work

The CW Contract was executed between Obayashi Corporation and the Nam Ngiep 1 Power Company on 30 September 2013 and the NTP was issued on 03 October 2014. Excavation works of the main dam, the diversion tunnel and the re-regulation dam were commenced in October 2014 and almost completed in February 2016. Accordingly, the concreting work was mainly commenced.

The cumulative work progress of the Civil Works until the end of February 2016 was 41.9% (Compared to planned progress of 42.3%) calculated in the same manner as described above for the value of achieved Interim Milestone Payments excluding advance payment.

While the diversion tunnel was completed and the Nam Ngiep River diverted on 31 October 2015 about a month ahead of schedule, progress of critical work such as the re-regulation dam structure and the main dam and powerhouse excavation continue to be the same as planned. The Civil Works overall can be considered to be on schedule despite increased quantities of dam excavation and slope stabilisation and the complex bedding of hard over soft layers of rock and the folding nature of these layers in the foundation rock of the main dam below the old river bed has created a difficulty to finalise the foundation design to the satisfaction of the Dam Safety Review Panel in all respects. Accordingly, further review of the dam foundation design has been necessary to create sufficient safety factor for stability against sliding of the dam on the weak zones. This has resulted in further excavation and concreting of a key structure in the old river bed. However, the original schedule to commence dam concreting early will be maintained as a result of the efforts of the Civil Works Contractor. The additional excavation works were almost completed as of the end of February 2016.

1.2.1.1 MAIN DAM AND POWER HOUSE

After starting the main dam excavation works in October 2014 on the left bank, both left and right banks were excavated down to El. 175 m by the end of December 2015. As shown in **Fig.4.1-2**, excavation below this level has continued together with the necessary slope protection works, revisiting some areas where damage to the dam foundation was sustained during the wet season and since.

The dam excavation works were well advanced in the river bed after diversion of the Nam Ngiep was achieved at the end of October 2015. However, excavated volumes are now known to be 20% greater than expected and part of this is needed to construct a 'key' structure due to the weak layers of rock being encountered in the dam foundation as shown in Fig. 4. The additional excavation work was almost completed in February 2016. It will be necessary to secure additional budget therefore from the geotechnical contingency. The excavation progress to-date is shown inFig. 5 below.

FIG. 4: PROGRESS DRAWING OF MAIN DAM EXCAVATION

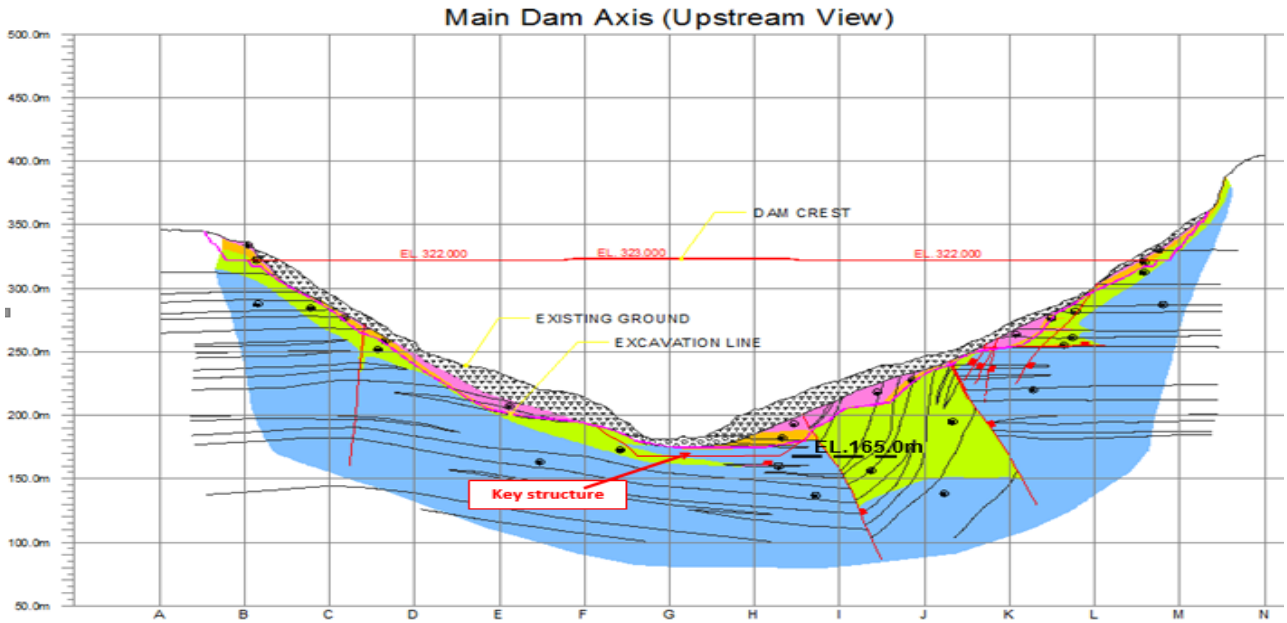


FIG. 5: EXCAVATION PROGRESS TO-DATE

Original Design (a)	Current situation anticipated (b)	Actual Progress (c)
1,650,218 m3	1,987,000 m3	1,987,000 m3
-	(b) / (a) = 120%	(c) / (b) = 100%

The dental and levelling concreting works will be commenced accordingly in March 2016, soon followed by the start of RCC placement.

1.2.1.2 RE-REGULATING DAM AND POWER HOUSE

The re-regulating powerhouse excavation and cofferdam works for river diversion were commenced in early October 2014. The excavation works for the powerhouse on the left bank were fully completed down to El. 146.7 m at the end of February 2015.

Structural concrete works were commenced in March 2015, in coordination with installation of the grounding system. The progress of structural concrete works is shown in Table 1 below.

TABLE 1: PROGRESS OF RE-REGULATING DAM STRUCTURAL CONCRETE WORKS

	Concrete (m^3) placed as at the end of January 2016					
Structure	Intake	Powerhouse	Tailrace	Spillway	Left Bank RCC	Total
Completed Qty.	10,990	6,197	1,676	3,758	10,109	32,730
Progress	**78%**			**16%**	**78%**	**54%**

The concrete volume placed already for both powerhouse and dam is 32,730m^3 being 54% of the revised total estimate of 60,447m^3 for both structures. The powerhouse concreting has advanced well and the formal handing-over of the appropriate working area from Civil Contractor to E&M Contractor for the installation of the draft tube liner was carried out at Site on 30 November 2015 in accordance with the appropriate Interface Milestone Date. The area was handed back on time to the Civil Contractor on 14 February 2016 for secondary concrete embedment of the draft tube liner and for the left bank structure redesigned as roller compacted concrete (RCC).

The shaping of the excavation of the re-regulating dam at the right bank was started in May 2015, and completed in the period ahead of the last wet season. The excavation works at the left bank for the labyrinth dam portion and the left bank structure were started and finished in October 2015.

The Dyke (saddle dam) embankment works on the right bank near the Houay Soup Resettlement Area were also started in November 2015 and continue satisfactorily as shown in Table 2 below.

TABLE 2: PROGRESS OF DYKE EMBANKMENT WORKS

Description	Unit	Planned Quantity	Progress Quantity	Progress
Earth material	m^3	289,500	218,803	75%
Filter material	m^3	18,600	9,279	49%
Rip-rap	m^3	23,700	2,897	12%

1.2.2 Temporary Work Facility

1.2.2.1 DIVERSION TUNNEL INLET AND OUTLET

The diversion tunnel works which is over 600 m in length and 10 m in diameter were commenced in October 2014 by drill and blast techniques and completed in late September 2015. The river diversion took place on 31 October 2015 together with construction of earth-fill cofferdams upstream and downstream.

1.2.2.2 SECONDARY UPSTREAM COFFER DAM

The concrete placement works in both conventional and roller compacted concrete (CVC and RCC respectively) for the secondary upstream cofferdam were started in November 2015 and almost completed ahead of construction schedule in February 2016. The grout curtain works are on-going, though not on any critical path of the overall construction works.

1.2.2.3 TEMPORARY BRIDGE

The temporary bridge works for the main river crossing were completed and the bridge opened for traffic from 16 January 2015.

1.2.2.4 PLANT YARD

These comprise the Aggregate Crushing Plant, the CVC Batching Plant and the RCC Batching Plant.

Foundation work and installation of equipment were completed at all the plant yards and the belt conveyor system from the RCC plant to the main dam is under construction (83% complete) and will be completed in May 2016.

Accordingly, through the RCC trial mix and trial embankment in October and November 2015, RCC placement in the permanent structure at the re-regulation dam followed on, starting in November 2015 and finishing during March 2015.

1.2.2.5 QUARRY

After removal of overburden the excavation of raw materials for aggregate crushing were started in July 2015. The nature and type of the rock being exploited is acceptable and quarry management is continually being improved.

1.2.3 Electrical and Mechanical Works

The EMWC was executed between Hitachi-Mitsubishi Hydro Corporation and NNP1PC on 1 June 2014 and the NTP was issued on 03 October 2014. The cumulative work progress of the Electrical and Mechanical Works progress until the end of February 2016 was 14.7% (compared to planned progress of 31.3%). This delay is due to change of the schedule of receipt of runner material for the first Unit at the Electrical and Mechanical Works Contractor's factory from December 2015 to March 2016. However, the runner will be shipped from the factory to the site on schedule by coordination of the manufacturing schedule in their factory. Accordingly, it has no impact on the overall schedule.

The main activities carried out during this month are described below:

a) The following documents were submitted:

- For the main power station, calculation documents of drainage capacities from drain valve of spiral case and penstock, insulation coordination study for 230 kV substation, capacity calculation of excitation system, mechanical strength of thrust bearing, upper guide bearing and lower guide bearing, and diagrams of connection with external equipment of excitation transformer and station service transformer;
- For the re-regulation power station, construction drawings of generator and water spray extinguishing system for main transformer, calculation documents of insulation

coordination study for 115 kV substation, diagram of connection with external equipment of station service transformer, and list of special tools for the generator.

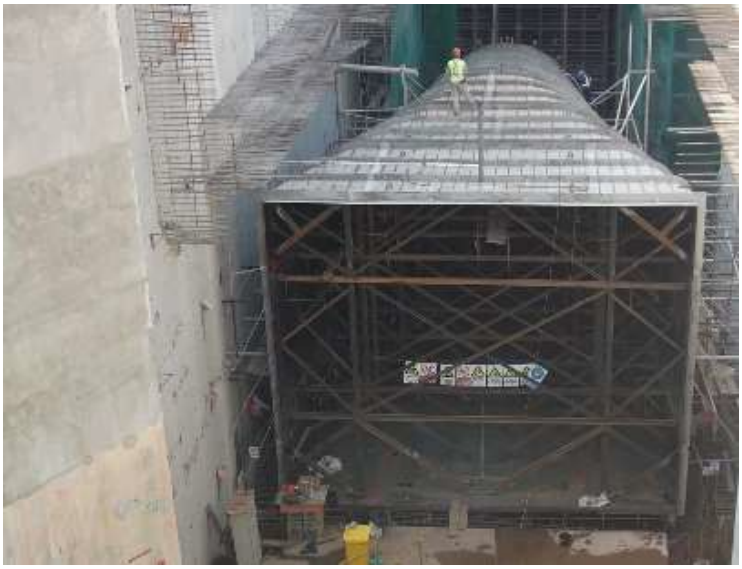
b) The installation work of embedded piping for the main powerhouse commenced on 17 February 2016 and it is under way in coordination with concrete casting work. The status of embedded pipe installation is shown in Fig. 6.

c) The installation work of the draft tube liner for re-regulation powerhouse was commenced on 3 December 2015 and completed on 15 February 2016. The draft tube liner after installation is shown in Fig. 7.

d) The grounding works for the main powerhouse and re-regulation power house are under way in coordination with concrete casting work.

FIG. 6: EMBEDDED PIPING INSTALLATION (MAIN POWERHOUSE)

FIG. 7: DRAFT TUBE LINER AFTER INSTALLATION (RE-REGULATION POWERHOUSE)



1.2.4 Hydraulic Metal Work

The HMWC was executed between IHI Infrastructure Systems (IIS) and NNP1PC on 18 April 2014 and the NTP was issued to the Contractor on 03 October 2014. The cumulative work progress of the Hydraulic Metal Works until the end of February 2016 was 17.7% (compared to planned progress of 18.3%). The main activities carried out during this month are described below

a) Main dam
- Inspection of steel materials for the upper horizontal penstock was completed.
- Fabrication of the lower horizontal penstock and inclined penstock were completed.
- Design of the spillway gate and spillway stoplog was almost completed. Design of hydraulic and control system still remains.
- Design of the intake gate, intake trash-rack, draft gate and riparian release conduit was completed except for the varied works referred to in Section 3.3 of this Report under 'Variations and Claims'
- Material procurement of the riparian release conduit will be commenced in March 2016.

1.2.5 Transmission Line

The TLW Contract was executed between Loxley-Sri Consortium and NNP1PC on 11 July 2014 and the NTP was issued to the 230kV TL Contractor on 03 October 2014. The cumulative work progress of the Transmission Line Works until the end February 2016 was 18.8% (compared to planned progress of 39.8%). The difference is chiefly as a result of delay to commencement of construction works by approximately 7 months while awaiting compensation matters to be resolved by NNP1PC. The Contractor has agreed to accelerate its Works and is planning to get back onto the original schedule within 8 months from starting. During the rainy season and with further delays due to compensation, virtually full access to most sections of alignment was achieved in 2015 following resolution of remaining environmental and social matters.

2 ENVIRONMENTAL MANAGEMENT MONITORING

2.1 Compliance and Environmental Monitoring

2.1.1 SS-ESMMP Review and Approval

In February 2016, a total of three SS-ESMMPs were approved by the NNP1PC EMO as shown below:

- SS-ESMMP for Levelling (Cutting & Filling) of the housing land and school compound for the Hatsaykham resettlers in Houay Soup Resettlement Area
- SS-ESMMP for HM's Sub-Contractor Labour Camp # 2; and
- SS-ESMMP for Embedded Piping- First stage

A SS-ESMMP for the development of 38 ha of paddy fields in the Houay Soup Resettlement Area was returned to the Contractor for further revision. The review of a SS-ESMMP for the Civil Work Construction of NNP1 Project's landfill is on hold until a new contractor is selected. Finally, the EMO is in the process of reviewing three SS-ESMMPs (Biomass Clearance, Disposal Area Construction at the SECC camp and Casting Replacement Concrete of the Main Dam).

2.1.2 Compliance Report

During February 2016, the EMO inspected 13 construction sites that have high environmental risks in accordance to the approved SS-ESMMPs and EMMP-CP. These included upstream and downstream cofferdams, camps (SECC, HM, Sinohydro, SongDa #2 , RT and IHI), spoil disposal area No. 2, main dam, re-regulating dam, CVC plant, RCC plant, aggregate plant yard, earth dyke construction and 230 kV transmission line (see Fig. 8 and Fig. 9 below).

FIG. 8: DAM AND COMMON FACILITIES CONSTRUCTION AREA

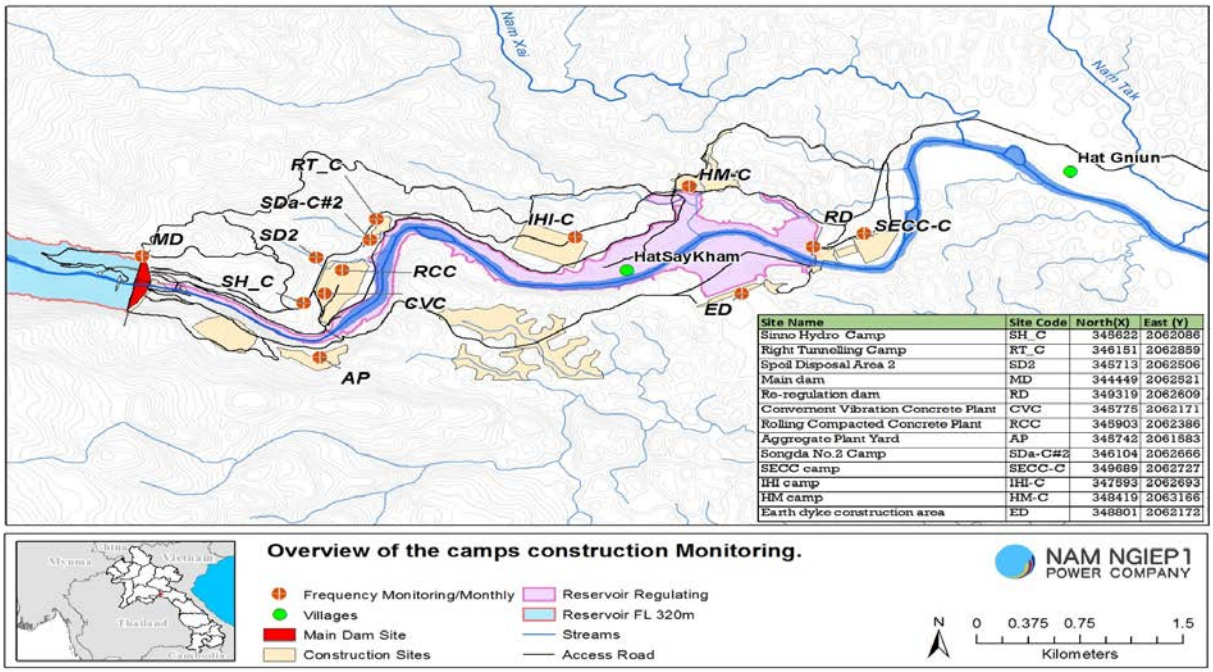
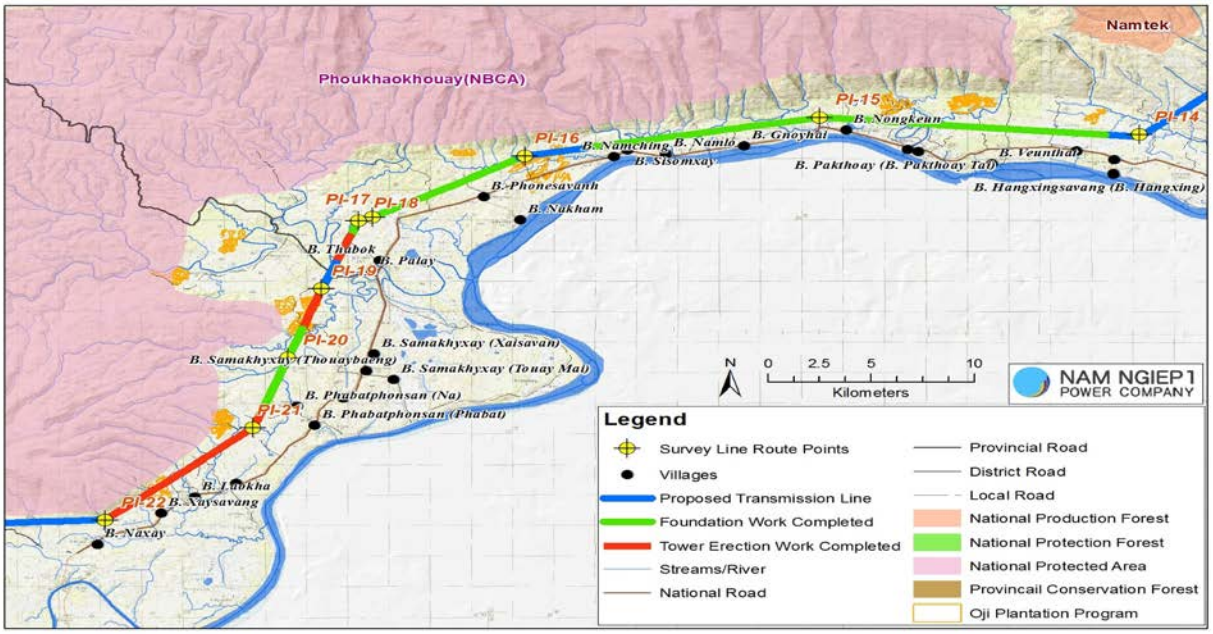


FIG. 9: A 230 KV TRANSMISSION LINE CONSTRUCTION MONITORING

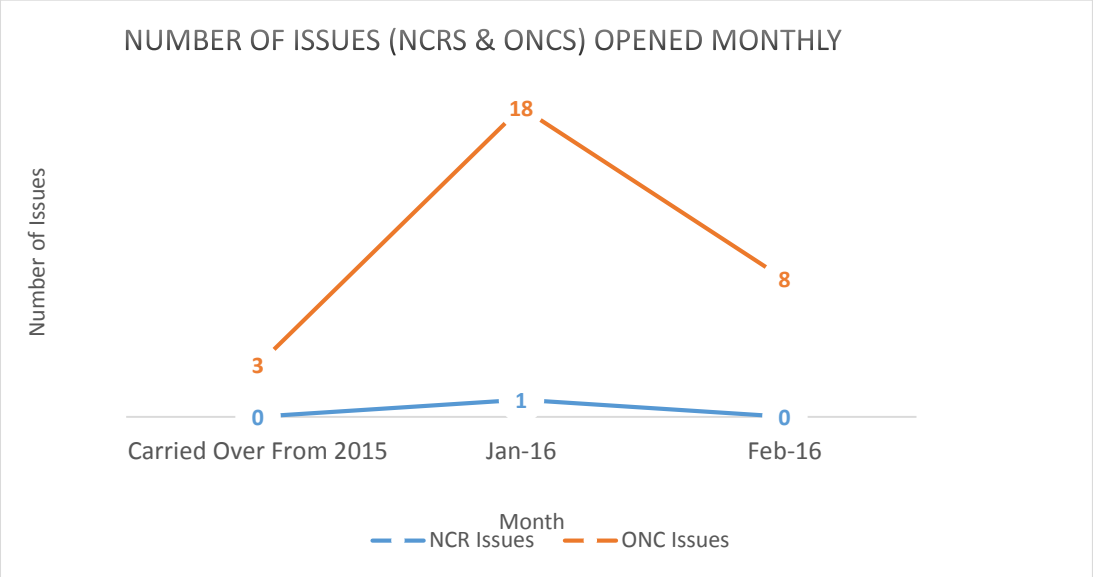


Key issues found during site inspections were associated with the Waste Water Treatment Systems (WWTSs) at various camp sites. So far, the upgrade of the WWTSs at three priority worker camps (i.e. RT, V&K, and Song Da) was ongoing, the finding of the December 2015 mission suggested that the upgrading has to be followed with the suggested design provided by the consultant. The EMO will review of the upgraded systems and will include in the March 2016 progress report. The EMO also continued to monitor the system operation and water quality of the effluent being discharged from all camps' WWTSs as shown in section 2.1.3.3 Effluent Discharge.

TABLE 3: SUMMARY OF ONCS AND NCRS IN FEBRUARY 2016

Reporting period	ONCs	NCR Level 1	NCR Level 2
New issues in February 2016	8	0	
Carried over from January 2016	19	1	
Total issues in February	27	1	
Resolved during February 2016	17	1	
Unresolved, carried over into March 2016	10	0	0

FIG. 10: TRENDS OF ONCS/NCRS IN FEBRUARY 2016



As shown in Table 3 and Fig. 10, the number of new ONCs was reduced from 18 to 8 in February 2016. With a carry-over from January 2016, a total of 27 ONCs and 1 NCR were active in February 2016. Out of which, 17 ONCs and 1 NCR were resolved by the end of February 2016. Thus, a total of 10 ONCs will be carried over into March 2016.

Table 4 below summarizes the types of environmental compliance issues raised with the Contractor during February 2016. It is observed that the water pollution and hazardous waste management remained the key issues experienced on site. The progress on implementing corrective actions will continue to be monitored in March 2016.

TABLE 4: SUMMARY OF NEW NON-COMPLIANCES ISSUED IN FEBRUARY 2016

Non-Compliance Category	ONC	NCR1	NCR2	NCR3
Water Pollution (site)	4			
Hazardous Waste Management including minor oil spills at workshops, material storage and handling	2			
General waste management	1			
Commenced construction activity on site without prior-approved SS-ESMMP	1			
TOTAL	8	0	0	0

Photograph 1-4: Inspection of Worker's Camps (HM, SongDa#2 and SECC)

Photograph 5: Main Dam area

Photograph 6: Houy Soup Bridge Construction

2.1.3 Environmental Monitoring

The final detailed design of the water quality laboratory was completed by the NNP1PC Technical Department and approved by the EMO in February 2016.

Water quality monitoring was conducted on a monthly basis for surface water of Nam Ngiep and its main tributaries, ground water, effluent and construction area discharges as described in details below.

Photograph 7: RCC Plant Sediment Pond

Photograph 8: CVC Plant Sediment Pond

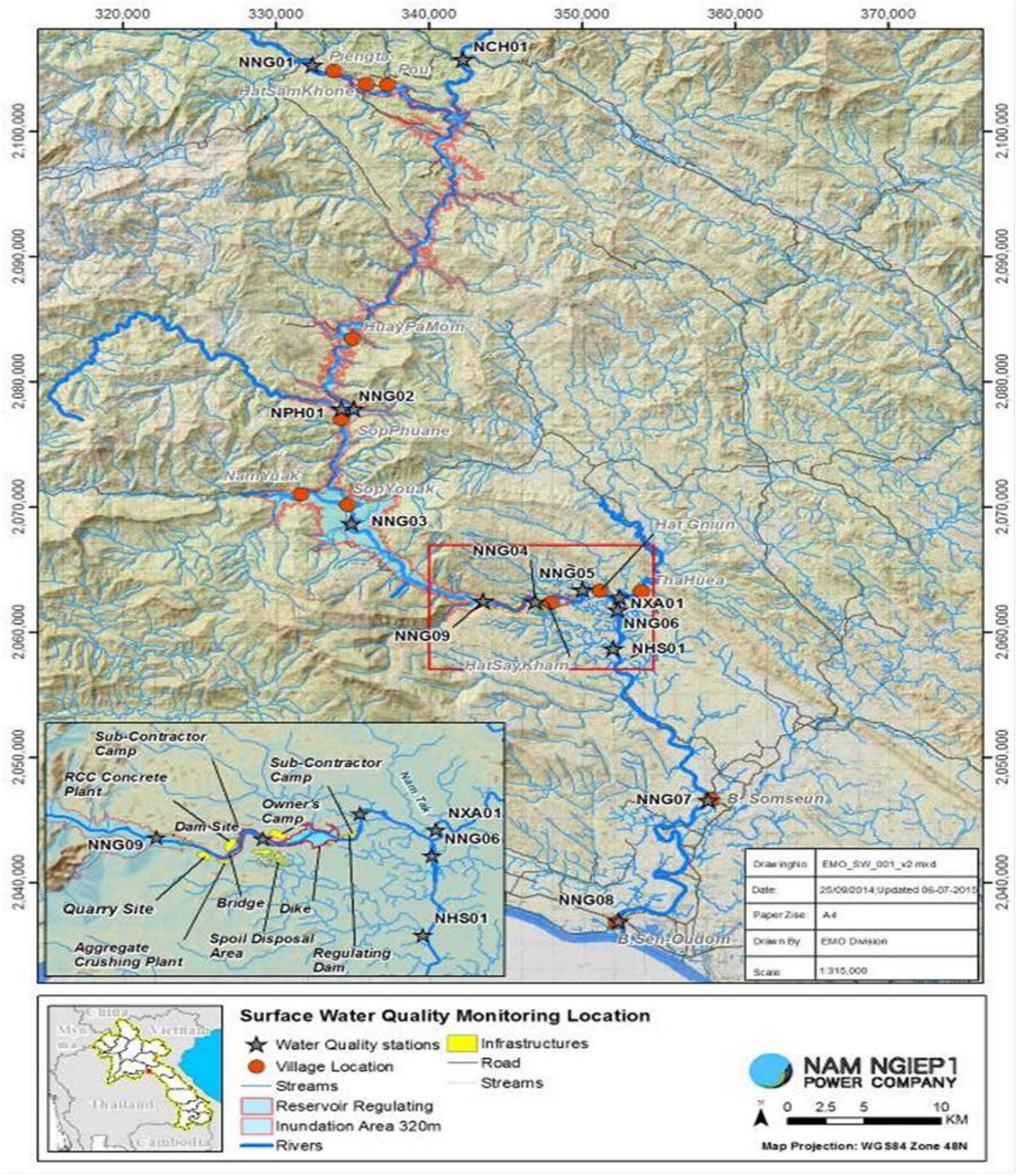
Photograp 9-10: Progress of 230 kV Transmission Line

2.1.3.1 SURFACE (AMBIENT) WATER QUALITY MONITORING

Surface water samples are collected and analysed twice a month[1]from nine stations in Nam Ngiep and four stations in the main tributaries including the lower Nam Chian, Nam Phouane, Nam Xao and Houay Soup (total 13 stations).

[1] Monthly for chemical parameters and fortnightly for physical parameters

FIG. 11: SURFACE WATER QUALITY MONITORING STATIONS



Key findings for surface water quality monitoring in February 2016 are shown in Table 5, 6, 7 and 8 as summarized below:

- Nam Ngiep

Only the Chemical Oxygen Demand (COD) was found to be slightly higher than the National Surface Water Quality Standard (<5 mg/l) for the station of Nam Ngiep at Ban Somsuen (NNG07) with a value recorded at 6.30 mg/l. The results of COD at the upstream and downstream stations of the project area were found to be less than 5 mg/l.

All other parameters were below the National Surface Water Quality Standard.

TABLE 5: PHYSICAL AND CHEMICAL PARAMETERS OF NAM NGIEP SURFACE WATER QUALITY MONITORING IN FEBRUARY 2016

	Site Name	Nam Ngiep								
	Station Code	NNG01	NNG02	NNG03	NNG09	NNG04	NNG05	NNG06	NNG07	NNG08
	Date	08/02/16	09/02/16	09/02/16	10/02/16	10/02/16	10/02/16	10/02/16	10/02/16	10/02/16
Parameters (Unit)	**Guideline**									
pH	5.0 – 9.0	7.84	8.26	8.01	7.14	8.07	7.31	8.71	7.15	7.62
DO (%)		97.1	103.1	109.3	111.8	111.8	107.8	106.1	107.4	106.5
DO (mg/l)	>6.0	9.64	9.72	9.99	9.72	9.83	10.07	9.77	9.5	9.56
Conductivity (µs/cm)		104.3	94.2	90.4	91.7	92.1	91	92	93	93
TDS (mg/l)		52.1	47	45.2	46	46	45.5	46	46.5	46.5
Temperature (°C)		14.5	17.2	18.7	17.3	17.7	17.9	18.6	20.3	20.6
Turbidity (NTU)		11.03	10.3	8.65	10.53	10.4	9.95	9.13	10.35	9.25
TSS (mg/l)		12.6	11.6	9.6	12.6	8.4	8	8.7	11.7	8.1
NO_3-N (mg/l)	<5.0	0.12	0.11	0.12	0.08	0.41	0.05	0.05	0.04	0.05
NH_3-N (mg/l)	<0.2	ND[12]	ND[12]	ND[12]	ND[12]	ND[12]	ND[12]	ND[12]	ND[12]	ND[12]
Total Iron (mg/l)		0.58	0.814	0.695	0.444	0.456	0.44	0.509	0.826	0.76
COD (mg/l)	<5.0	ND[16]	ND[16]	ND[16]	ND[16]	ND[16]	ND[16]	ND[16]	6.3	ND[16]
BOD_5 (mg/l)	<1.5	1.3	ND[13]	ND[13]	ND[13]	ND[13]	ND[13]	ND[13]	ND[13]	ND[13]
Manganese (mg/l)	<1	0.036	ND[9]	ND[9]	ND[9]	0.029	ND[9]	0.025	0.029	ND[9]
Total coliform (MPN/100 ml)	<5,000	350	350	220	540	110	130	79	110	240
Fecal coliform (MPN/100 ml)	<1,000	350	70	110	17	14	4.5	4.5	6.8	17

ND[1] (<0.0005 mg/L) ND[2] (<0.0003 mg/L) ND[3] (<0.0002 mg/L) ND[4] (<0.005 mg/L) ND[5] (<0.003 mg/L)
ND[6] (<0.09 mg/L) ND[7] (<0.07 mg/L) ND[8] (<0.04 mg/L) ND[9] (<0.02 mg/L) ND[10] (<0.01 mg/L)
ND[11] (<0.3 mg/L) ND[12] (<0.2 mg/L) ND[13] (<1.0 mg/L) ND[14] (<1.5 mg/L) ND[15] (<4.0 mg/L)
ND[16] (<5.0 mg/L)

TABLE 6: PHYSICAL PARAMETER RESULTS OF NAM NGIEP SURFACE WATER QUALITY (FORTNIGHTLY MEASURED) IN FEBRUARY 2016

	Site Name	Nam Ngiep River								
	Station code	NNG01	NNG02	NNG03	NNG09	NNG04	NNG05	NNG06	NNG07	NNG08
	Date	23/02/16	25/02/16	25/02/16	26/02/16	26/02/16	26/02/16	26/02/16	26/02/16	26/02/16
Parameters (Unit)	**Guideline**									
pH	5.0 - 9.0	7.91	7.48	7.23	7.72	7.82	7.46	7.79	7.42	7.31
DO (%)		106	106.7	107	106.2	109.1	108.7	108.3	106.6	103.8
DO (mg/L)	>6.0	8.76	8.99	9.11	9.26	9.37	9.18	9.16	8.76	8.51
Conductivity(µs/cm)		103.7	94.7	109.2	99.3	95.6	91.1	95.9	94.9	101.6
TDS (mg/L)		51.85	47	54	49	47	45	47	47	50
Temperature (°C)		23.1	22.7	22.5	21.7	22.5	23.3	23	24.6	24.8
Turbidity (NTU)		7.7	7.26	6.29	5.37	5.59	3.9	5.55	5.75	6.32

- **Nam Chiane (NCH01)**

The Nam Chian station is located about 66 km upstream of the NNP1PC Project construction site. In February 2016, it was found that the COD exceeded the National Surface Water Quality Standard (<5 mg/l) with a value recorded of 21.9 mg/l. All of other remaining parameters monitored were below the National Surface Water Quality Standard.

- **Nam Phouan (NPH01)**

The Nam Phouan station is located about 24 km upstream of NNP1PC Project construction site. The amount of COD exceeded the National Surface Water Quality Standard (<5 mg/l) with a value recorded at 17.8 mg/l. Biochemical Oxygen Demand (BOD5) exceeded the National Surface Water Quality Standard (1.5 mg/l) with a value recorded at 6.1 mg/l. All of other remaining parameters monitored complied with the National Surface Water Quality Standard.

- **Nam Xao (NXA01)**

Nam Xao has a confluence with Nam Ngiep at the downstream of NNP1 Project construction area. All parameters monitored at the Nam Xao station complied with the National Surface Water Quality Standard.

- **Nam Houay Soup (NHS01)**

Nam Houay Soup has a confluence with Nam Ngiep River at the downstream of NNP1 construction area. All parameters monitored for Nam Houay Soup (station NHS01) were within the National Surface Water Quality Standard, except Chemical Oxygen Demand (COD) which was above the National Surface Water Quality Standard (less than 5.0 mg/l) with a value recorded at 8.3 mg/l. There is no construction activity at Houay Soup resettlement area during the monitored period. Therefore, the water quality of this site presents the ambient condition.

TABLE 7: RESULTS OF PHYSICAL AND CHEMICAL PARAMETERS OF NAM CHIAN, NAM PHOUAN, NAM XAO AND NAM HOUAY SOUP IN FEBRUARY 2016

	Site Name	Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
	Station Code	NCH01	NPH01	NXA01	NHS01
	Date	08/02/16	09/02/16	10/02/16	10/02/16
Parameters (Unit)	**Guideline**				
pH	5.0 - 9.0	8.65	8.23	8.66	7.33
DO (%)		104.9	107.8	104.4	97
DO (mg/l)	>6.0	10.95	10.61	9.48	9.15
Conductivity (µs/cm)		45	77.5	139.8	56.5
TDS (mg/l)		22.5	38	74	28.2
Temperature (°C)		12	15.1	19.3	17.4
Turbidity (NTU)		6.44	1.86	4.18	2.39
TSS (mg/l)		9	ND[16]	ND[16]	ND[16]
NO_3-N (mg/l)	<5.0	0.08	0.08	0.04	0.05
NH_3-N (mg/l)	<0.2	ND[12]	ND[12]	ND[12]	ND[12]
Total Iron (mg/l)		0.446	0.128	0.546	0.625
COD (mg/l)	<5.0	21.9	17.8	ND[16]	8.3
BOD_5 (mg/l)	<1.5	ND[13]	6.1	ND[13]	1.0
Manganese (mg/l)	<1	ND[9]	ND[9]	0.037	ND[9]
Total coliform (MPN/100 ml)	<5,000	490	79	110	240
Fecal coliform (MPN/100 ml)	<1,000	490	49	49	240

ND[1] (<0.0005 mg/L)	ND[2] (<0.0003 mg/L)	ND[3] (<0.0002 mg/L)	ND[4] (<0.005 mg/L)	ND[5] (<0.003 mg/L)
ND[6] (<0.09 mg/L)	ND[7] (<0.07 mg/L)	ND[8] (<0.04 mg/L)	ND[9] (<0.02 mg/L)	ND[10] (<0.01 mg/L)
ND[11] (<0.3 mg/L)	ND[12] (<0.2 mg/L)	ND[13] (<1.0 mg/L)	ND[14] (<1.5 mg/L)	ND[15] (<4.0 mg/L)
ND[16] (<5.0 mg/L)				

TABLE 8: PHYSICAL PARAMETERS RESULTS OF SURFACE WATER QUALITY – NAM CHIAN, NAM PHOUAN, NAM XAO AND NAM HOUAY SOUP (FORTNIGHTLY MEASURED) FOR FEBRUARY 2016

	Site Name	Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
	Station Code	NCH01	NPH01	NXA01	NHS01
	Date	23/02/16	25/02/16	26/02/16	26/02/16
Parameters (Unit)	Guideline				
pH	5.0 - 9.0	7.37	7.26	8.65	8.41
DO (%)		107.2	111.6	104.8	104.8
DO (mg/l)	>6.0	9.42	9.27	8.68	9.15
Conductivity (µs/cm)		46.1	74.7	148.7	69.9
TDS (mg/l)		23.05	37	74	35
Temperature (°C)		19.8	23.4	24.3	21.4
Turbidity (NTU)		11.5	1.59	2.14	2.17

- Nam Chian (NCH01)

The Nam Chian is about 66 km upstream of the NNP1PC Project construction site. All parameters monitored for Nam Chian at the bridge station (NCH01) complied with the National Surface Water Quality Standard.

- Nam Phouan (NPH01)

HOUAY SOUP IN JANUARY 2016

2.1.3.2 GROUNDWATER QUALITY MONITORING

In February 2016, groundwater quality was tested in three boreholes at Ban Hatsaykham and a private well at Ban Hat Gniun (Fig. 12). The assessment results are as the following:

- **Ban Hatsaykham:** The pH levels for all three boreholes (GHSK01, GHSK02 & GHSK03) were 6.36, 6.31 and 6.45 respectively which is slightly lower than the National Standard range of between 6.5 and 9.2. The instance of low pH will continue to be monitored. However, these levels do not pose any risks to local communities' health. All of other remaining parameters monitored complied with the standard.
- **Ban Hat Gniun:** The pH level was 6.39, slightly lower than the National Standard range of between 6.50 and 9.20. Faecal coliforms and E.Coli bacteria were 4.5 MPN/100ml which was higher than the National Standard. These level of exceedences are not of health risk concerns to the local villagers since the water is used for washing and bathing only. Nevertheless, the EMO regularly communicated the result with the SMO so that it can inform the village authorities and villagers.

FIG. 12: GROUNDWATER QUALITY MONITORING LOCATIONS

TABLE 9: GROUNDWATER QUALITY MONITORING RESULTS IN FEBRUARY 2016

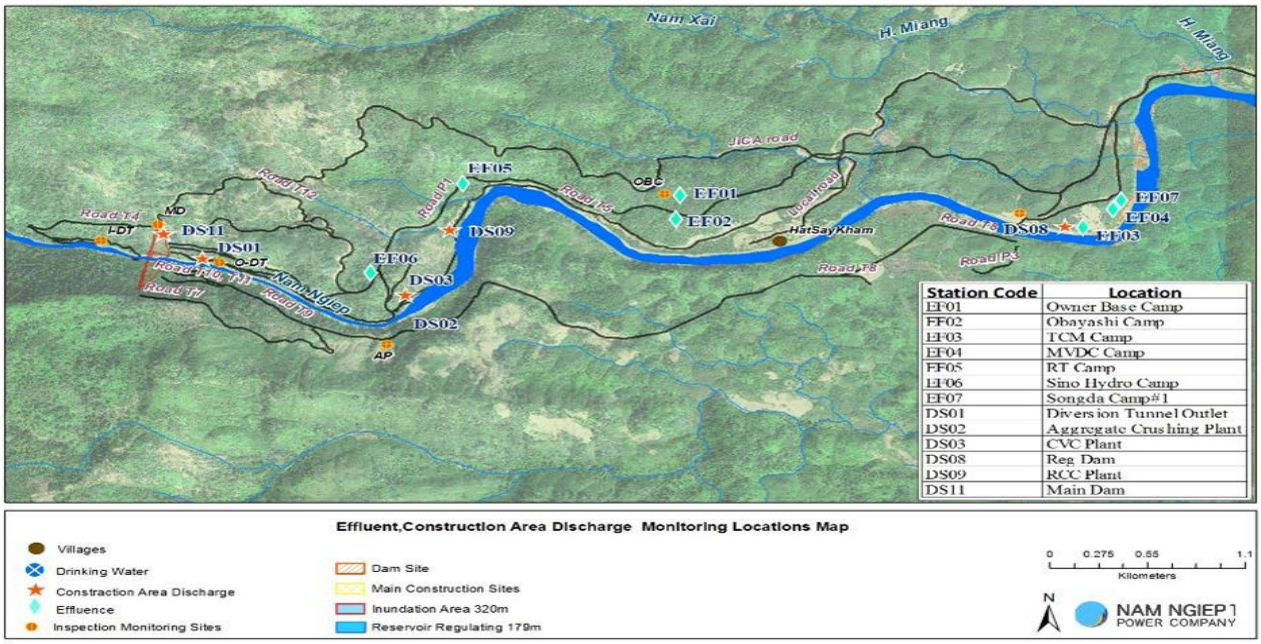
	Site Name	Ban Hatsaykham			Ban Hat Gniun
	Station Code	GHSK01	GHSK02	GHSK03	GHGN01
	Date	15/02/16	15/02/16	15/02/16	15/02/16
Parameter (Unit)	Guideline				
pH	6.5-9.2	6.36	6.31	6.45	6.39
Sat. DO (%)		59.1	66	45.7	54.3
DO (mg/l)		4.72	5.22	3.77	4.39
Conductivity (µs/cm)		90.5	67.1	88.5	190.9
TDS (mg/l)	<1,200	45.25	33.5	43	95.45
Temperature (°C)		25.9	26.4	25.9	24.14
Turbidity (NTU)	<20	0.2	0.17	0.22	1.14
Faecal coliform (MPN/100 ml)	0	0	0	0	4.5
E.Coli Bacteria (MPN/100 ml)	0	0	0	0	4.5

ND[1] (<0.0005 mg/L)	ND[2] (<0.0003 mg/L)	ND[3] (<0.0002 mg/L)	ND[4] (<0.005 mg/L)	ND[5] (<0.003 mg/L)
ND[6] (<0.09 mg/L)	ND[7] (<0.07 mg/L)	ND[8] (<0.04 mg/L)	ND[9] (<0.02 mg/L)	ND[10] (<0.01 mg/L)
ND[11] (<0.3 mg/L)	ND[12] (<0.2 mg/L)	ND[13] (<1.0 mg/L)	ND[14] (<1.5 mg/L)	ND[15] (<4.0 mg/L)
ND[16] (<5.0 mg/L)				

2.1.3.3 EFFLUENT DICHARGE

The effluents from all Camps were monitored during January 2016. These include Owner's Site Office and Village, Obayashi Corporation (OC) Camp, TCM Camp, Right Tunnelling (RT) Camp, Sino Hydro Camp, Songda5 Camp#1, Songda 5 Camp#2 and HM Camp. During the mission, effluent was discharged from Owner's Site Office and Village, RT Camp and HM Camp. A map of monitoring location is demonstrated in Fig. 13 below:

FIG. 13: MAP OF EFFLUENT DISCHARGE MONITORING LOCATIONS



All parameters were assessed in accordance to the Effluent Guideline specified in the Project's Concession Agreement Annex C. Key assessment results are shown in Table 8 and summarised below.

- **Owner's Site Office and Village (NNP1PC) [EF01]:** All parameters monitored were within the Guideline except the Total Coliforms which were found to be higher than the Guideline (400MPN/100ml) at 160,000 MPN/100 ml. Discharge from the Owner's Site Office and Village was approximately 17 m^3/day**.**
- **OC Camp [EF02]:** The COD, BOD5 and NH3-N exceeded the Guideline at 146 mg/l, 88.2 mg/l and 38 mg/l respectively. The amount of Total and Faecal Coliforms were 92,000 MPN/100 ml which were much higher than the Guideline.
- **TCM Camp [EF03]:** All parameters monitored were within the Guideline except faecal coliforms that exceeded with a value recorded as 24,000 MPN/100 ml.
- **Right Tunneling Camp (RT Camp) [EF05]:** The amount of Faecal Coliforms have substantially increased from a recorded values of 1,700 MPN/100 ml in January 2016 to 54,000 MPN/100 ml in February 2016 as a result of more effluent being stored at the WWTS.
- **Sino Hydro Camp [EF06]:** The amount of Ammonia Nitrogen (NH3-N) was 13 mg/l which was above the Guideline. In addition, the amount of total and faecal coliforms were found to be 240 MPN/100 ml and 130 MPN/100 ml which were lower than the Standard.
- **Songda5 Camp#1 [EF07]:** The COD, BOD_5 and NH_3-N exceeded the Guideline at 162 mg/l, 82.6 mg/l and 11 mg/l respectively. The total and faecal coliforms were also high at this camp with values of more than 160,000 MPN/100 m.

- **Songda5 Camp#2 [EF08]:** The COD and BOD_5 exceeded the Guideline at 72 mg/l and 12 mg/l respectively. The Total and Faecal Coliforms were also high at this camp with recorded values of more than 92,000 MPN/100 ml.
- **HM Camp [EF09]:** The COD and BOD_5 exceeded the Guidelines at 44.4 mg/l and 31 mg/l respectively. Specifically, it was found that the level of total and Faecal Coliforms were significantly above the Guideline at 160,000 MPN/100 ml. The discharge from the HM camp was approximately 0.2 m^3/day.

All camp's WWTS are subject to the upgrade in accordance to the technical design provided by the independent consultant. The upgrade is in progress in 3 priority camps namely V&K, Right Tunneling Camp and Song Da 5 worker camps (#1 and 2) since December 2015. The EMO will carry out a status review of all WWTSs at these priority camps as well as other camps to check if they are being upgraded in accordance with the recommendations provided by the independent consultant. Findings will be discussed with the TD and the Contractor to agree on the corrective actions by May before issuing an NCR.

TABLE 10: RESULTS OF THE EFFLUENT DISCHARGE MONITORING IN FEBRUARY 2016

	Site Name	Owner Base Camp	Obayashi Camp	TCM Camp	RT Camp	Sino hydro Camp	Songda5 Camp#1	Songda5 Camp#2	HM Camp
	Station Code	EF01	EF02	EF03	EF05	EF06	EF07	EF08	EF09
	Date	11/02/16	11/02/16	11/02/16	11/02/16	11/02/16	11/02/16	11/02/16	11/02/16
Parameters (Unit)	Guideline								
pH	6.0 - 9.0	7.59	8.23	7.86	7.73	7.55	7.15	8.44	7.93
Sat. DO (%)	-	38.9	73.3	107.7	56.6	34.5	20.4	12.3	58.7
DO (mg/l)	-	3.29	6.35	8.95	4.99	3.19	2.88	1.13	4.8
Conductivity (µs/cm)	-	420	1,055	217.7	346	566	696	860	679
TDS (mg/l)	-	210	527	109	173	283	348	430	340
Temperature (°C)	-	22.4	21.2	23.5	20.5	18	20.8	19	24.3
Turbidity (NTU)	-	0.34	19.8	19.7	10.84	18.1	12.89	33	11
TSS (mg/l)	<50	ND[16]	25	29.2	10	30	21.1	66.2	12.9
COD (mg/l)	<125	10.3	146	49.4	42.5	65.9	118	244	85.8
BOD (mg/l)	<30	7.4	88.2	13.5	15.7	17.1	72	97.2	44.4
NH_3-N (mg/l)	<10.0	3	38	ND[12]	5	11	12	30	31
Oil & Grease (mg/l)	<10.0	ND[13]	1	2	ND[13]	1	4	6	ND[13]
Total coliform (MPN/100ml	<400	>160,000	92,000	24,000	54,000	240	92,000	>160,000	160,000
Fecal Coliform (MPN/100ml)		3,300	92,000	24,000	14,000	130	92,000	>160,000	160,000
Discharge Volume (m^3/day)		17	0	0	0	0	0	0	0.2

ND[1] (<0.0005 mg/L) ND[2] (<0.0003 mg/L) ND[3] (<0.0002 mg/L) ND[4] (<0.005 mg/L) ND[5] (<0.003 mg/L)
ND[6] (<0.09 mg/L) ND[7] (<0.07 mg/L) ND[8] (<0.04 mg/L) ND[9] (<0.02 mg/L) ND[10] (<0.01 mg/L)
ND[11] (<0.3 mg/L) ND[12] (<0.2 mg/L) ND[13] (<1.0 mg/L) ND[14] (<1.5 mg/L) ND[15] (<4.0 mg/L)
ND[16] (<5.0 mg/L)

2.1.3.4 CONSTRUCTION AREA DISCHARGE

During February 2015, the discharges from Regulating Dam (DS08) and Main Dam (DS01) were monitored. In addition, the sedimentation pond at Aggregate Crushing Plant was built to resolve turbid water being discharged from this site and the leakage of RCC's sedimentation pond was fixed. No discharge from the Aggregate Crushing Plant, RCC Plant and CVC Plant was observed due to less washing activity being implemented in these areas during the sampling period.

TABLE 11: RESULTS OF CONSTRUCTION AREA DISCHARGE IN FEBRUARY 2016

	Site Name	**Regulating Dam**		**Main Dam**	
	Station Code	**DS08**		**DS11**	
	Date	**11/02/16**	**22/02/16**	**11/02/16**	**22/02/16**
Parameter (Unit)	**Guideline**				
pH	6.0 - 9.0	8.03	6.86	7.32	6.86
Sat. DO (%)	-	108.2	104.3	105.4	103.5
DO (mg/L)	-	9.05	8.42	9.14	8.44
Conductivity (µs/cm)	-	210.2	203.5	424	408
TDS (mg/l)	-	105.1	101.75	212	204
Temperature (°C)	-	23.2	25.3	21.3	24.8
Turbidity (NTU)	-	1.84	0.64	21.2	647
TSS (mg/l)	<50	ND[16]	ND[16]	51.7	768
Oil & Grease (mg/l)	<10	ND[13]	ND[13]	ND[13]	ND[13]
Discharge Volume (m^3/day)		120	100	6,000	6,000

ND[1] (<0.0005 mg/L)	ND[2] (<0.0003 mg/L)	ND[3] (<0.0002 mg/L)	ND[4] (<0.005 mg/L)	ND[5] (<0.003 mg/L)
ND[6] (<0.09 mg/L)	ND[7] (<0.07 mg/L)	ND[8] (<0.04 mg/L)	ND[9] (<0.02 mg/L)	ND[10] (<0.01 mg/L)
ND[11] (<0.3 mg/L)	ND[12] (<0.2 mg/L)	ND[13] (<1.0 mg/L)	ND[14] (<1.5 mg/L)	ND[15] (<4.0 mg/L)
ND[16] (<5.0 mg/L)				

- **Main Dam Construction Area (DS01):**

The Total Suspended Solids (TSS) was above the Guideline set at less than 50 mg/l with values recorded as 51.7 mg/l in mid-February 2016, and 768 mg/l in late February 2016. The sediment in the ponds need to be removed routinely to ensure that the ponds have sufficient capacity to settle sediments in the turbid water. All other parameters complied with the National Effluent Discharge Standard. This site discharged water at a rate of 6,000 m^3/day.

- **Re-regulating Dam (DS08):**

All parameters monitored complied with the National Standard. This site discharged water at a rate of 120 m^3/day.

ND[1] (<0.0005 mg/L)	ND[2] (<0.0003 mg/L)	ND[3] (<0.0002 mg/L)	ND[4] (<0.005 mg/L)	ND[5] (<0.003 mg/L)
ND[6] (<0.09 mg/L)	ND[7] (<0.07 mg/L)	ND[8] (<0.04 mg/L)	ND[9] (<0.02 mg/L)	ND[10] (<0.01 mg/L)
ND[11] (<0.3 mg/L)	ND[12] (<0.2 mg/L)	ND[13] (<1.0 mg/L)	ND[14] (<1.5 mg/L)	ND[15] (<4.0 mg/L)
ND[16] (<5.0 mg/L)				

2.1.3.5 GRAVITY FED WATER SUPPLY (GFWS) QUALITY MONITORING

Water quality monitoring for GFWS system was conducted on a monthly basis with the aim to provide necessary recommendations to the users of possible impacts caused by bathing and washing. During February 2016, the water samples were taken from water taps at Ban Hat Gniun and Ban Thaheua.

Results of the assessment for GFWS of Ban Hat Gniun and Ban Thaheua are shown in Table 8 and summarized as the following:

- **Ban Thahuea (WTHH02):** All parameters complied with the National Drinking Water Standard, except faecal coliforms and E.coli bacteria parameters which were above the National Standards (0 MPN/100ml) both at 12 MPN/100ml.
- **Ban Hat Gniun (WHGN02):** All parameters complied with National Drinking Water Standard, except faecal coliform and E.coli bacteria parameters which were both 23 MPN/100ml, above the National Standards of 0 MPN/100ml.

These levels of bacterial contamination would not have significant impact for bathing and washing purposes, but the water must be boiled before drinking. This information has been shared with SMO to inform village authorities and villagers accordingly.

TABLE 12: RESULTS OF THE GRAVITY FED WATER SUPPLY QUALITY MONITORING IN FEBRUARY 2016

	Site Name	Ban Thaheua	Ban Hat Gnuin
	Station Code	WTHH02	WHGN02
	Date	15/02/16	15/02/16
Parameter (Unit)	Guideline		
pH	6.5-8.5	6.73	7.23
Sat. DO (%)		104.6	111.8
DO (mg/l)		8.85	9.16
Conductivity (µs/cm)	<1,000	77.0	94.2
TDS (mg/l)	<600	38.5	47.1
Temperature (°C)	<35	22.9	24.6
Turbidity (NTU)	<10	1.04	0.71
Color (Pt-Co)	<5	<5	<5
Faecal coliform (MPN/100 ml)	0	12	23
E.Coli Bacteria (MPN/100 ml)	0	12	23

2.1.3.6 DUST EMISSION MONITORING

During February 2016, dust monitoring was conducted over a period of 72 hours in Ban Hat Gnuin and Ban Hatsaykham. In addition, dust emission monitoring was conducted for 24 consecutive hours at the Main Dam, Aggregate Crushing Plant, RCC Plant, Sino Hydro Camp, Songda Camp#2 and Owner's Site Office and Village to assess possible impact on worker's health. The result suggested that the dust levels (maximum average) at Ban Hat Gnuin and Ban Hatsaykham (closer to the construction site) were within the National Standard and lower than most of the construction sites, such as, at the aggregate crushing plant, RCC plant and main dam. The results for Ban Hat Gnuin and Ban Hatsaykham are shown in Table 13 and Table 14and Fig. 15 and Fig. 16whilst the results for construction sites and camps are shown in Fig.17 to Fig 22 below:

FIG. 14: NOISE AND DUST EMISSION MONITORING LOCATIONS

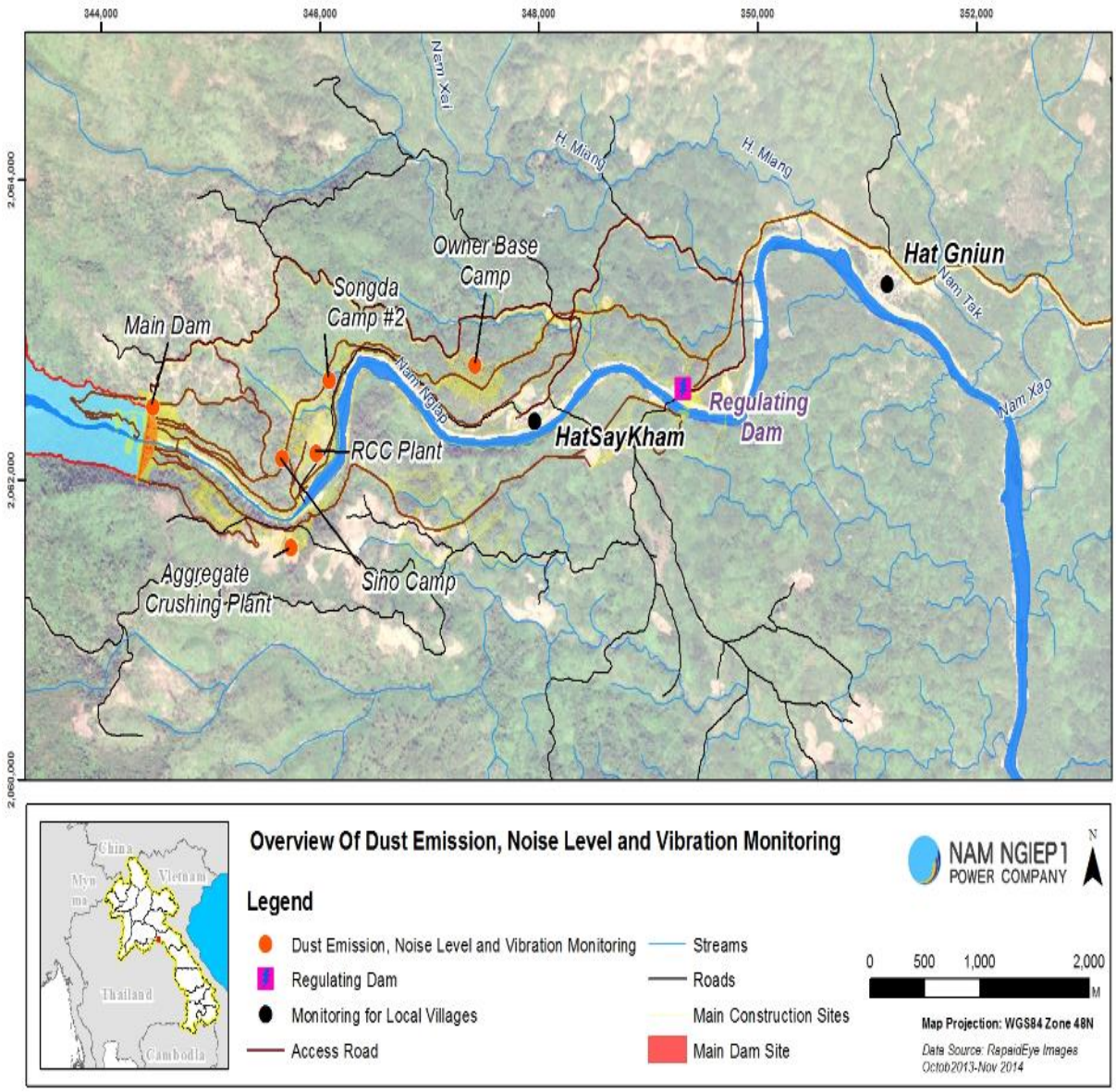


TABLE 13 : 24 HOUR AVERAGE DUST CONCENTRATIONS MEASURED IN BAN HAT GNIUN

Ban Hat Gniun - 24 Hour Average Dust Concentrations			
Period	00 to 24 Hours	24 to 48 Hours	48 to 72 Hours
Start Time	13/02/2016 13:44	14/02/2016 13:44	15/02/2016 13:44
End Time	14/02/2016 13:44	15/02/2016 13:44	16/02/2016 14:24
Average Data Recorded in 24h (mg/m^3)	0.048	0.045	0.057
Guideline Average in 24h (mg/m^3)	**0.12**	**0.12**	**0.12**

FIG. 15: DUST MONITORING RESULTS AT BAN HAT GNUIN IN FEBRUARY 2016

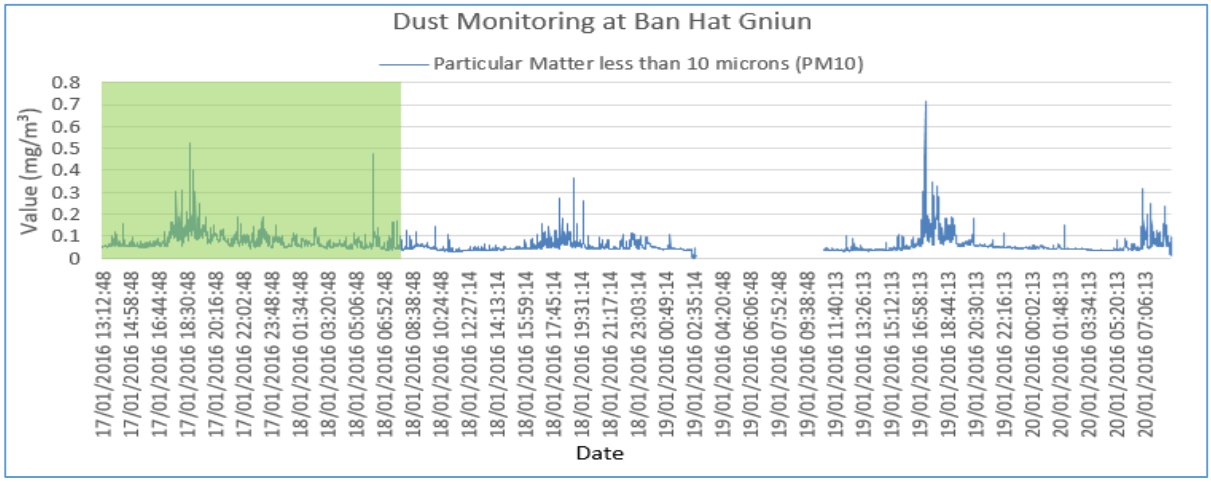
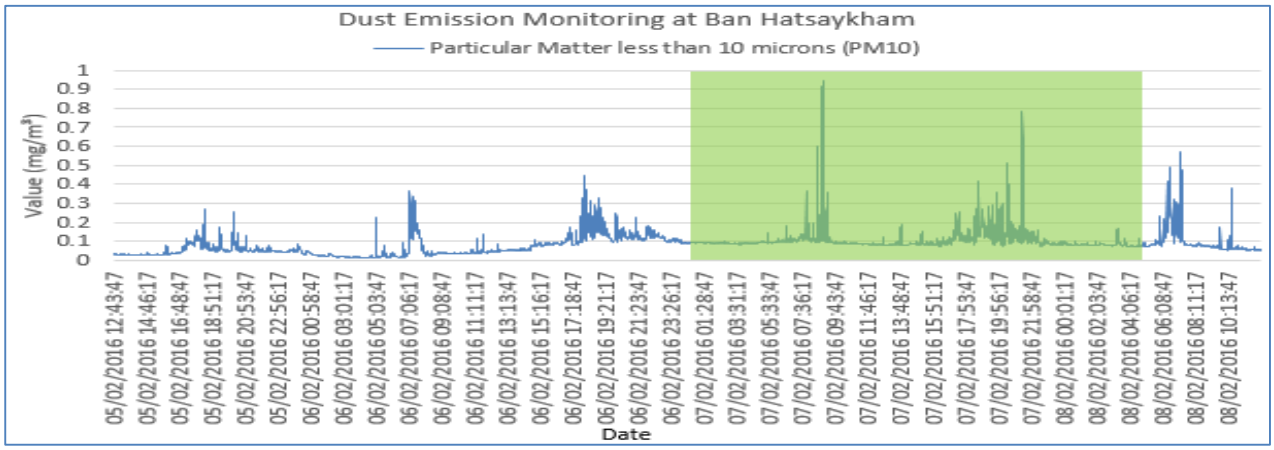


TABLE 14: 24 HOUR AVERAGE DUST CONCENTRATION MEASURED IN BAN HATSAYKHAM

Ban Hatsaykham – 24 Hour Average Ambient Air Dust Concentrations			
Period	00 to 24 Hours	24 to 48 Hours	48 to 72 Hours
Start Time	05/02/2016 12:43	06/02/2016 12:43	07/02/2016 12:43
End Time	06/02/2016 12:43	07/02/2016 12:43	08/02/2016 12:42
Average Data Recorded in 24h (mg/m³)	0.046	0.107	0.103
Guideline Average in 24h (mg/m³)	**0.12**	**0.12**	**0.12**

FIG. 16: DUST MONITORING RESULTS AT BAN HATSAYKHAM IN FEBRUARY 2016



- **Aggregate Crushing Plant:** The average dust concentration on the monitored dates complied with the National Environmental Standard (0.12 mg/m³) with an average value of 0.086 mg/m³ (Fig. 17). This was resulted from the reduction of crushing machine operation. Mitigation measures were also undertaken by the contractor, such as the installation of sprinkler systems to compress the dust generated from the aggregate crushing plant.

- **RCC Plant:** The average dust concentration found at the RCC plant was 0.047 mg/m³ (Fig. 18) which was below the National Environmental Standard (0.12 mg/m³);

- **Songda Camp#2:** The average dust concentration at the Songda camp#2 was 0.067 mg/m³ (Fig. 19) which was below National Environmental Standard (0.12 mg/m³);

- **Sino Hydro Camp:** The average dust concentration was 0.037 mg/m^3 (Fig. 20) which was below National Environmental Standard (0.12 mg/m^3).

- **Main Dam:** The average dust concentration was 0.090 mg/m^3 (Fig. 22). Thus, it is considered complying with the National Environmental Standard (0.12 mg/m^3)

FIG. 17: DUST MONITORING RESULTS AT AGGREGATE CRUSHING PLANT IN FEBRUARY 2016

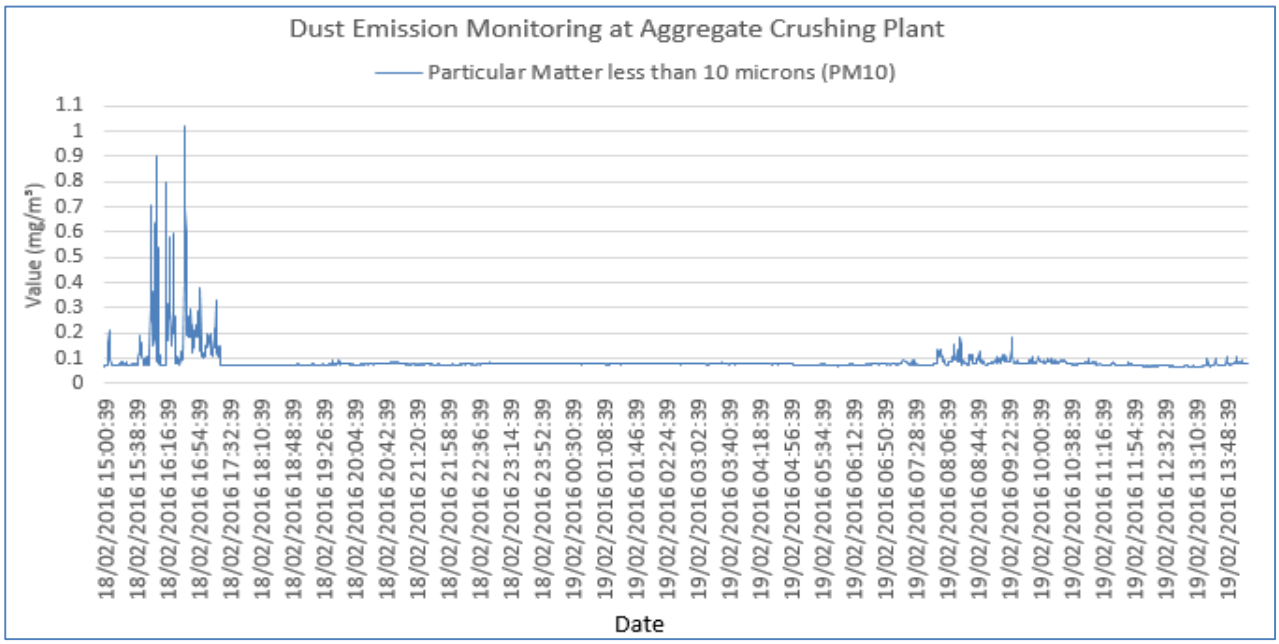


FIG. 18: DUST MONITORING RESULTS AT RCC PLANT IN FEBRUARY 2016

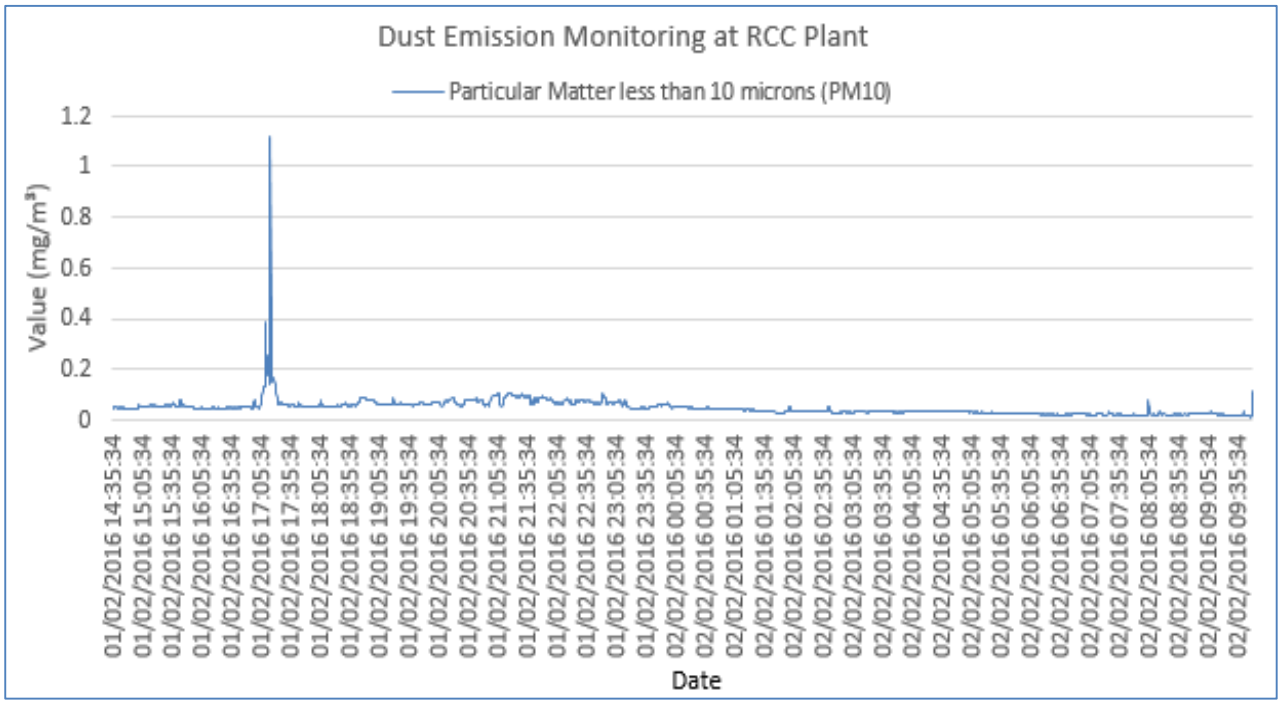


FIG. 19: DUST MONITORING RESULTS AT SONGDA5 CAMP#2 IN FEBRUARY 2016

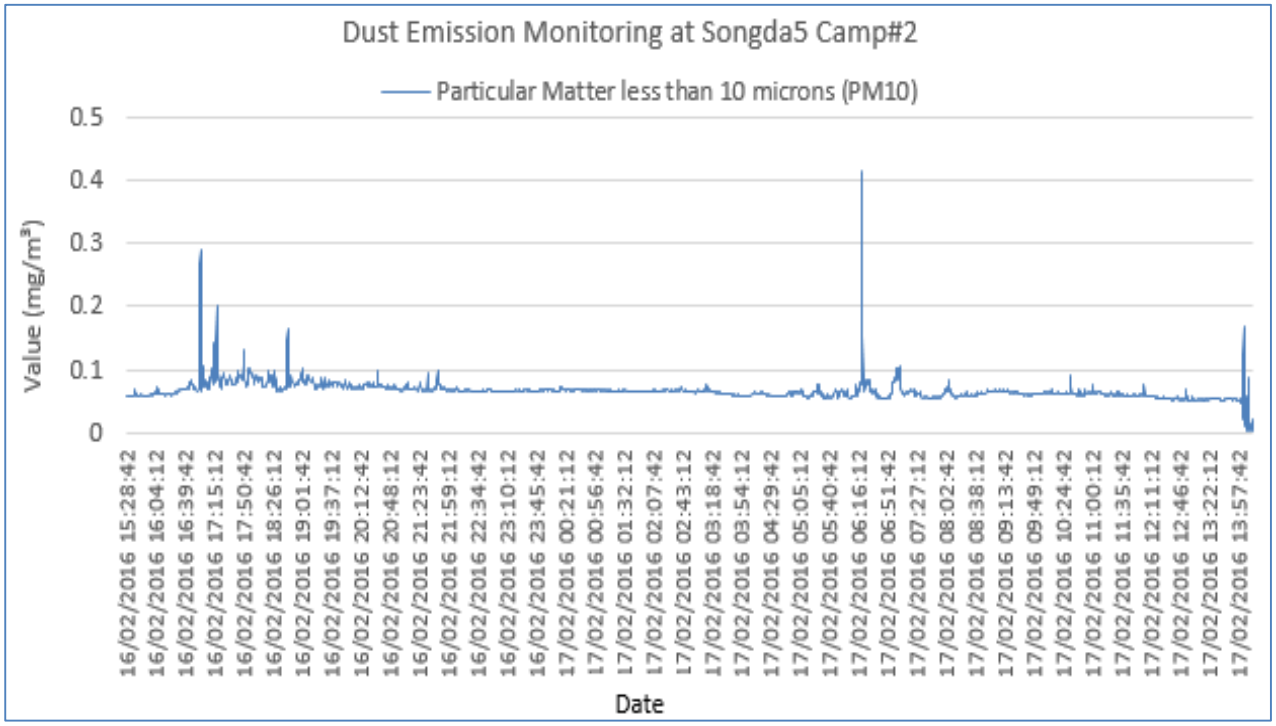


FIG. 20: DUST MONITORING RESULTS AT SINO HYDRO CAMP IN FEBRUARY 2016

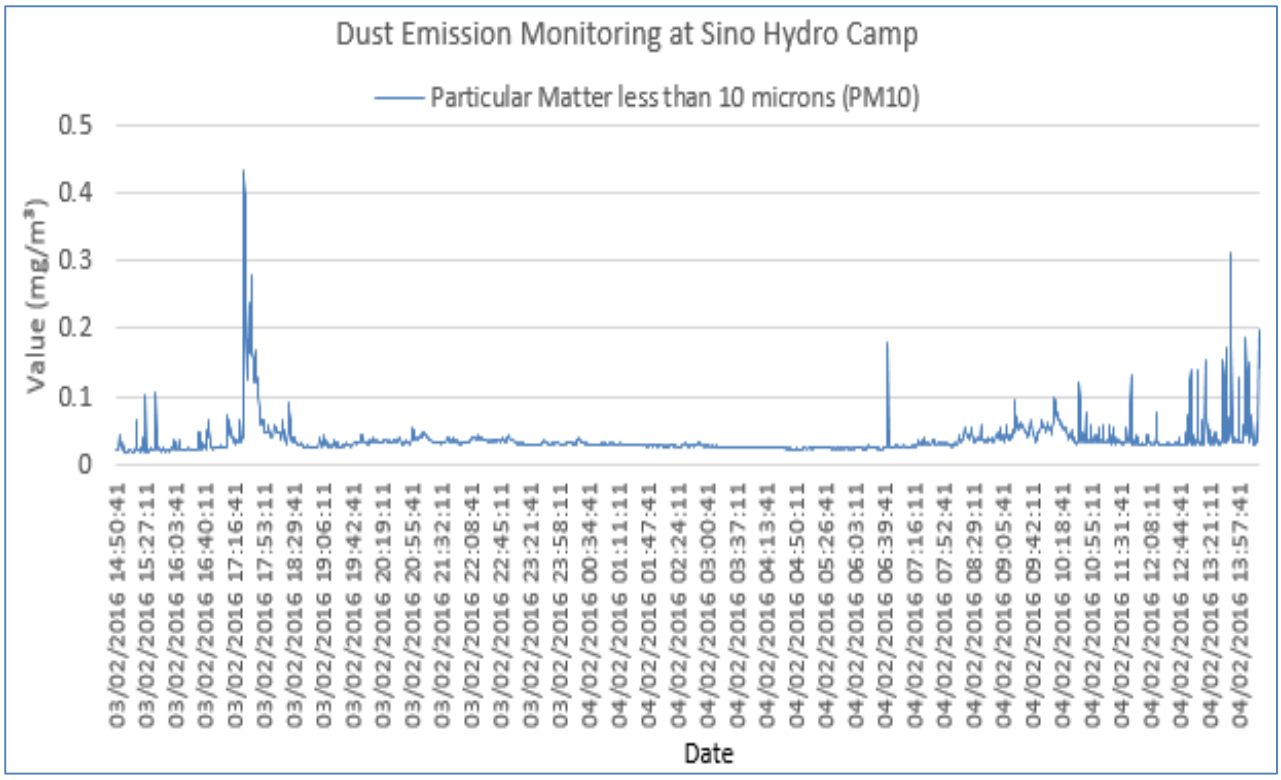


FIG. 21: DUST MONITORING RESULTS AT OWNER'S SITE OFFICE AND VILLAGE IN FEBRUARY 2016

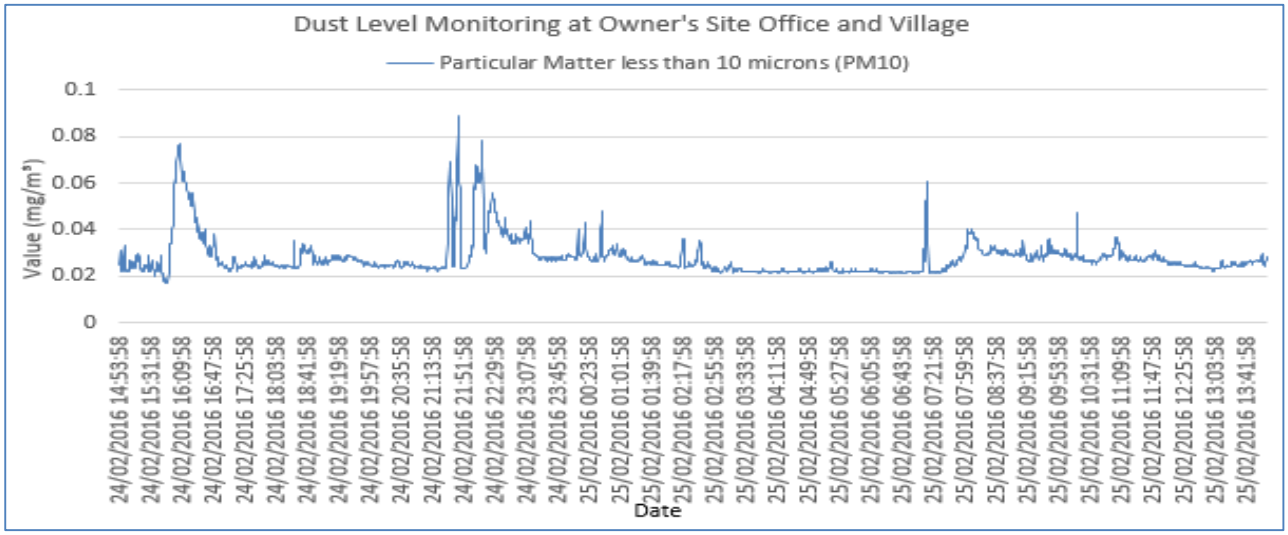
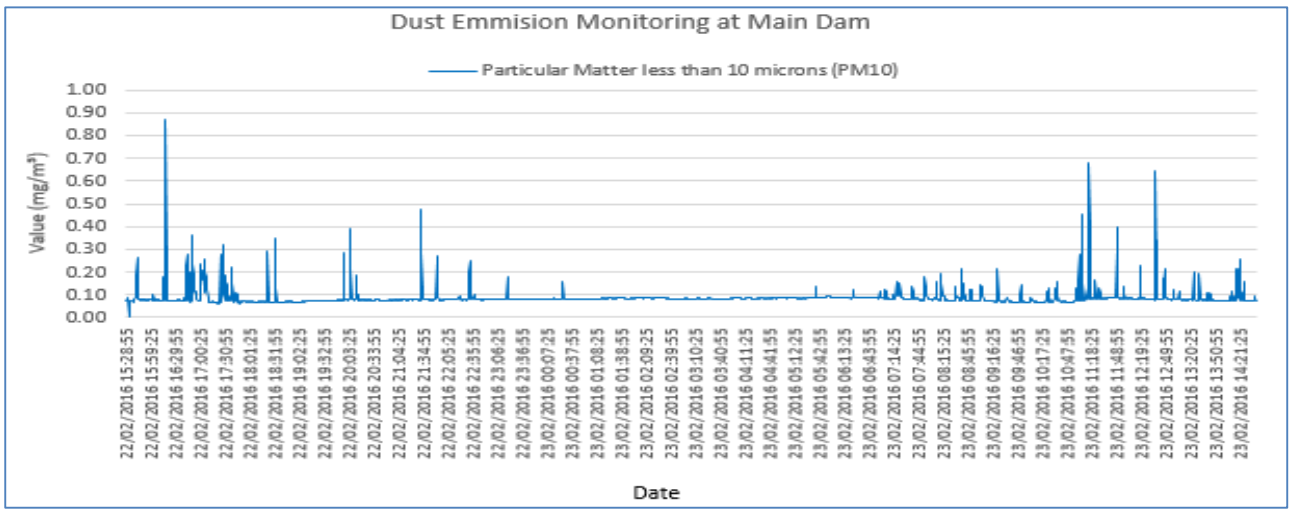


FIG. 22: DUST MONITORING RESULTS AT MAIN DAM IN FEBRUARY 2016



2.1.3.7 NOISE MONITORING

During February 2016, noise monitoring was conducted in Ban Hatsaykham and Ban Hat Gnuin for at least 72 consecutive hours in each village. Noise monitoring was also conducted at the Aggregate Crushing Plant, RCC Plant, Sino Hydro Camp, Songda Camp#2, Owner's Site Office and Village, and Main Dam for 24 consecutive hours.

Results of the noise monitoring for February 2016 are shown in Table 15, 16,7,18,19,20 and 21 ; andFig. 23, 24, 25, 26, 27, 28, 29 and 30 , as summarized below:

TABLE 15: AVERAGE RESULTS OF NOISE MONITORING AT BAN HAT GNUIN IN FEBRUARY 2016

Noise Level (dB)	13-14/02/16		14-15/02/16		15-16/02/16		16/02/2016
	06:00 – 22:00	22:01 – 06:00	06:00 – 22:00	22:01 – 06:00	06:00 – 22:00	22:01 – 06:00	06:00-22:00
Data Record Max	70.05	64.4	74.4	71.8	73.1	74.6	73.7
Guideline Max	***115***	***115***	***115***	***115***	***115***	***115***	***115***
Data Record Average	49.42	42.40	51.08	43.17	48.5	40.57	50.43
Guideline Averaged	***55***	***45***	***55***	***45***	***55***	***45***	***55***

FIG. 23: RESULTS OF NOISE LEVEL MONITORING AT BAN GNUIN IN FEBRUARY 2016

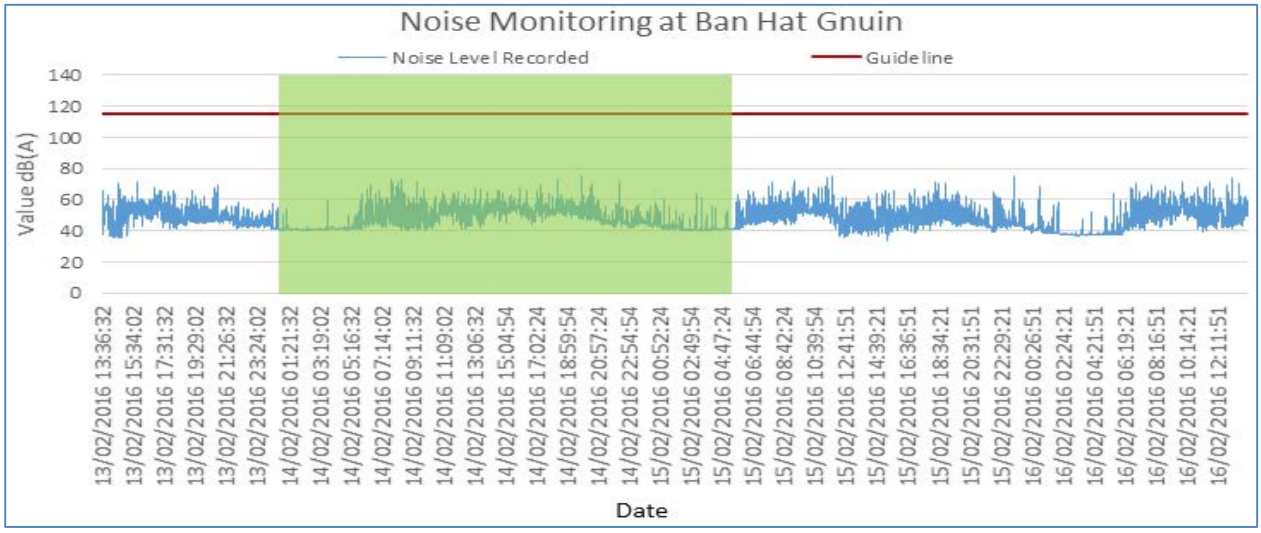


TABLE 16: NOISE MONITORING AVERAGE RESULTS AT BAN HATSAYKHAM IN FEBRUARY 2016

Noise Level (dB)	05-06/02/2016		06-07/02/2016		07-08/02/2016		08/02/2016
	06:00 – 22:00	22:01 – 06:00	06:00 – 22:00	22:01 – 06:00	06:00 – 22:00	22:01 – 06:00	06:00-22:00
Data Record Max	69.65	73.1	72.8	71.1	75.4	71	74.2
Guideline Max	***115***	***115***	***115***	***115***	***115***	***115***	***115***
Data Record Average	45.59	44.54	46.6	41.8	46.21	42.32	47.93
Guideline Averaged	***55***	***45***	***55***	***45***	***55***	***45***	***55***

FIG. 24: RESULTS OF NOISE LEVEL MONITORING AT BAN HATSAYKHAM IN FEBRUARY 2016

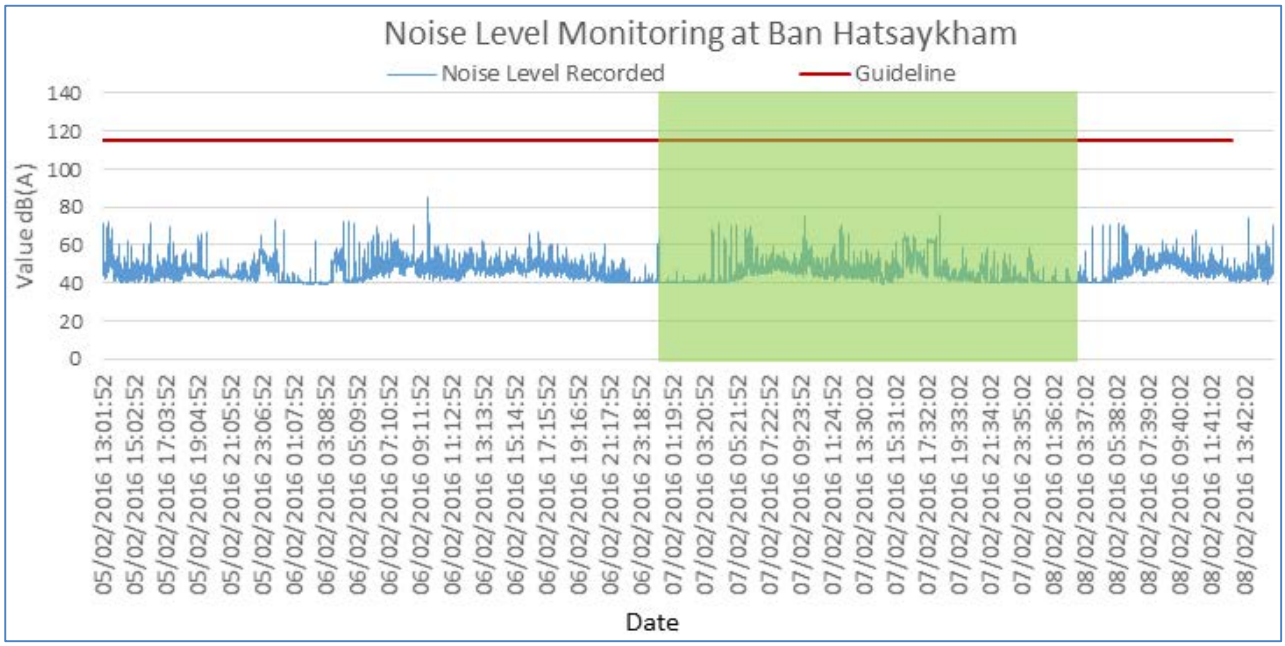


TABLE 17: AVERAGE RESULTS OF NOISE MONITORING AT AGGREGATE CRUSHING PLANT AND RCC PLANT IN FEBRUARY 2016

Aggregate Crushing Plant

Noise Level (dB)	18-19/02/2016		19/02/2016
	15:08-22:00	22:01 – 06:00	06:00 – 15:08
Data Record Max	84.9	58	78
Guideline Max	***115***	***115***	***115***
Data Record Average	57.61	45.18	52.58
Guideline Averaged	***70***	***50***	***70***

RCC Plant

Noise Level (dB)	01-02/02/2016		02/02/2016
	14:54 – 22:00	22:01 – 06:00	06:00-14:35
Data Record Max	76.2	71.4	81
Guideline Max	***115***	***115***	***115***
Data Record Average	55.13	54.47	60.27
Guideline Averaged	***70***	***50***	***70***

FIG. 25: RESULTS OF NOISE LEVEL MONITORING AT AGGREGATE CRUSHING PLANT IN FEBRUARY 2016

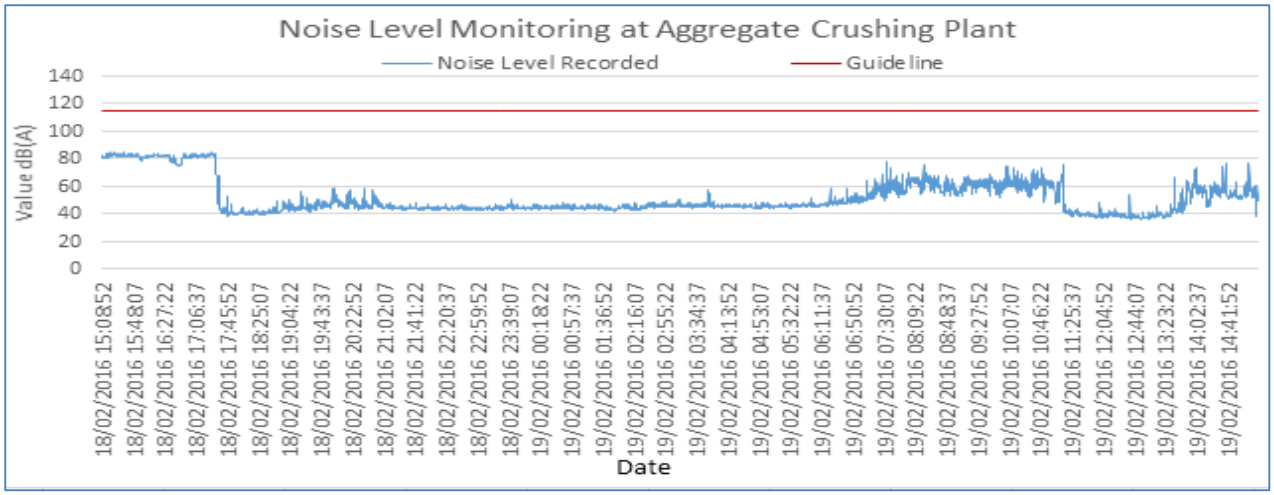


FIG. 26: RESULTS OF NOISE LEVEL MONITORING AT RCC PLANT IN FEBRUARY 2016

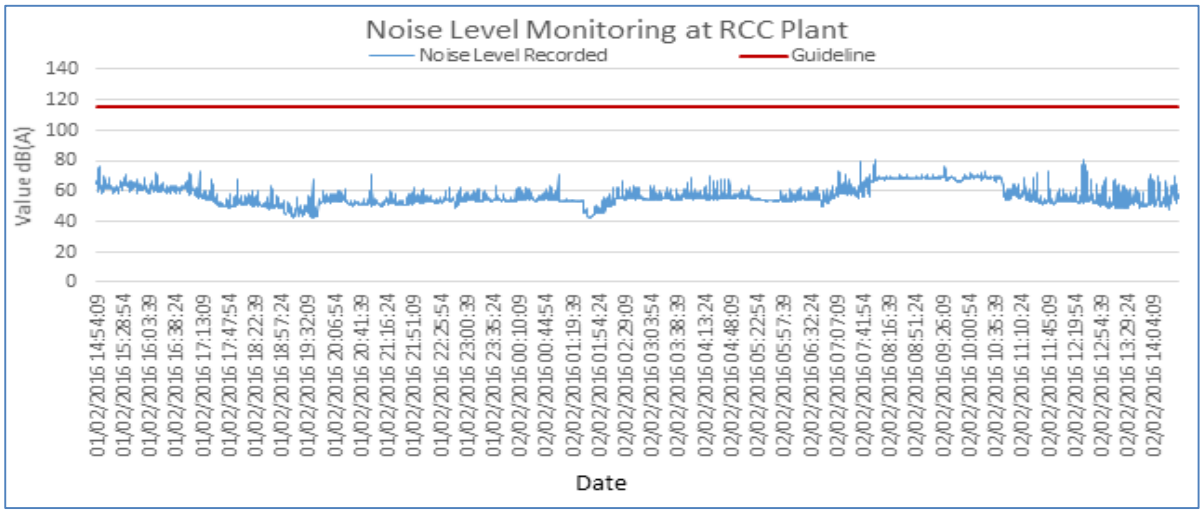


TABLE 18AND TABLE 19: AVERAGE RESULTS OF NOISE MONITORING AT SONGDA CAMP#2 AND SINO HYDRO CAMP IN FEBRUARY 2016

Songda Camp#2

Noise Level (dB)	16-17/02/2016		17/02/2016
	15:30 – 22:00	22:01 – 06:00	06:00-15:45
Data Record Max	70.9	58.7	77.9
Guideline Max	***115***	***115***	***115***
Data Record Average	49.370	45.427	48.677
Guideline Averaged	***70***	***50***	***70***

Sino Hydro Camp

Noise Level [dB (A)]	03-04/02/2016		04/02/2016
	15:08 – 22:00	22:01 – 06:00	06:00-15:35
Data Record Max	77.7	72.6	76.9
Guideline Max	***115***	***115***	***115***
Data Record Average	52.68	50.74	56.61
Guideline Averaged	***70***	***50***	***70***

FIG. 27: RESULTS OF NOISE LEVEL MONITORING AT SONGDA5 CAMP#2 IN FEBRUARY 2016

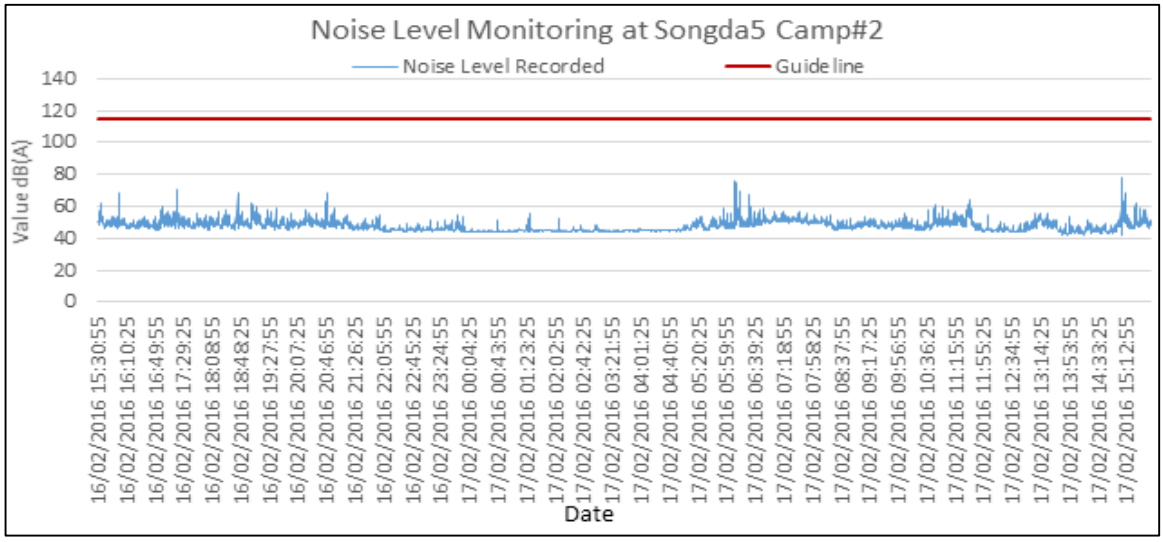


FIG. 28: RESULTS OF NOISE LEVEL MONITORING AT SINO HYDRO CAMP IN FEBRUARY 2016

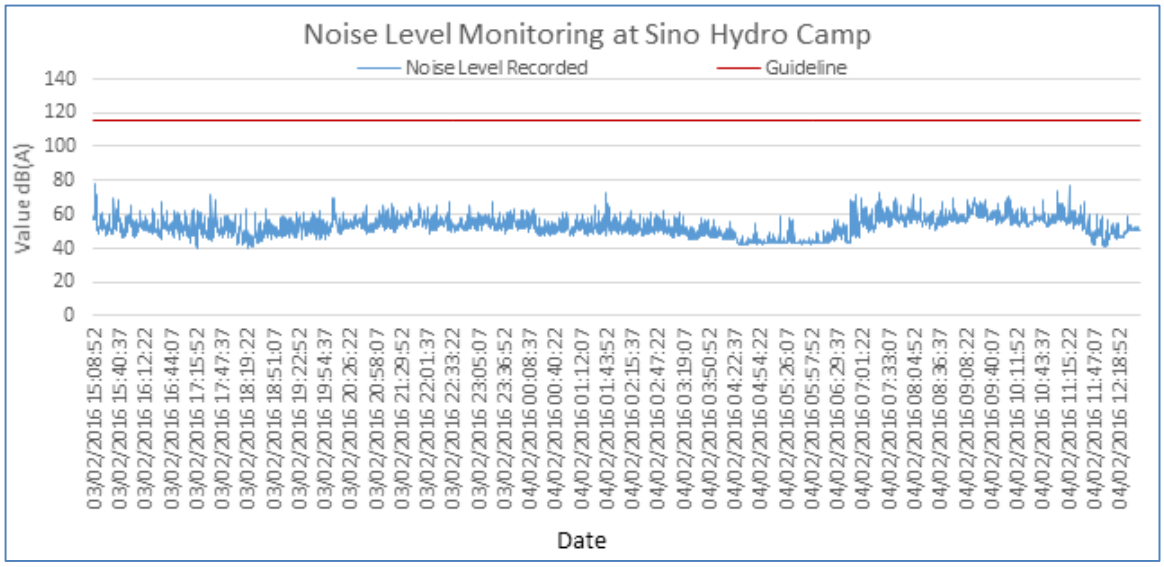


TABLE 20 AND TABLE 21: AVERAGE RESULTS OF NOISE MONITORING AT THE OWNER'S SITE OFFICE AND VILLAGE AND, THE MAIN DAM IN FEBRUARY 2016

Owner's Site Office and Village

Noise Level (dB)	24-25/02/2016		25/02/2016
	15:08 – 22:00	22:01 – 06:00	06:00-15:08
Data Record Max	62.1	50.8	51.7
Guideline Max	***115***	***115***	***115***
Data Record Average	43.81	44.77	40.62
Guideline Averaged	***70***	***50***	***70***

Main Dam

Noise Level (dB)	22-23/02/2016		23/02/2016
	15:44 – 22:00	22:01 – 06:00	06:00-14:32
Data Record Max	64.6	67.1	70.2
Guideline Max	***115***	***115***	***115***
Data Record Average	47.95	52.82	49.85
Guideline Averaged	***70***	***50***	***70***

FIG. 29: RESULTS OF NOISE LEVEL MONITORING AT OWNER'S SITE OFFICE AND VILLAGE IN FEBRUARY 2016

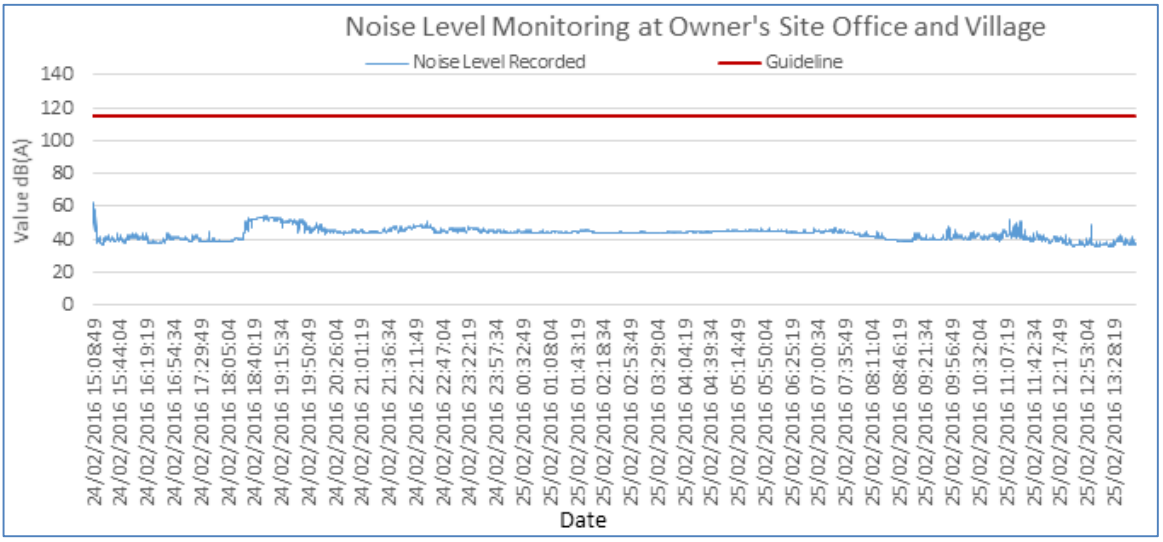
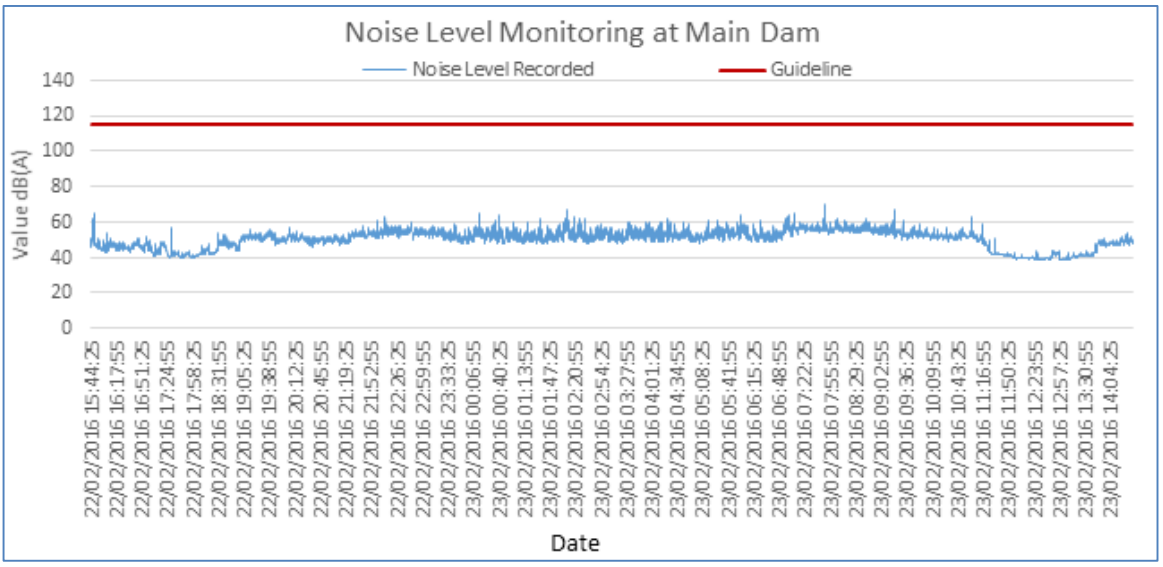


FIG. 30: RESULTS OF NOISE LEVEL MONITORING AT MAIN DAM IN FEBRUARY 2016



- **Ban Hat Gnuin:** The maximum noise level recorded was 74.4 dB(A) and the 24 hour average maximum noise levels was recorded as 51.08 dB(A) which were complied with the National Standard.
- **Ban Hatsaykham:** The maximum noise level recorded was 75.4 dB(A) and the 24 hour average noise level recorded was 47.93 dB(A) which were below the prescribed Standard.
- **Aggregate Crushing Plant:** The maximum noise level recorded in 24 hours was 84.9 dB(A) which was below the maximum Standard of 115 dB(A) whilst the maximum average noise level was recorded as 57.61 dB(A) which was complied with the National Standard of 70dB(A) for the period of 6:01-22:00.
- **RCC Plant:** The maximum noise level recorded was 81.0 dB(A) which was below the maximum Standard of 115 dB(A) in 24 hours. The average noise level during 22:01-6:00 AM was recorded as 54.47 dB(A) which was slightly higher than the National Standard (50 dB(A)). The EMO team visited

the site in mid-February during the indicated period to identify the sources of this exceedance. It was found that the windy condition during this time was the cause.

- **Songda Camp#2:** The maximum noise level recorded was 77.9 dB(A) which was below the maximum Standard of 115 dB(A) in 24 hours. The average noise level (maximum) was recorded as 49.37 dB(A) which was lower than the National Standard of 50 dB(A).
- **Sino Hydro Camp:** The recorded maximum noise level was 77.7 dB(A) which was below the maximum Standard of 115 dB(A) in 24 hours. The average noise level during 22:01-6:00 AM was recorded as 50.74 dB(A) which was slightly higher than the National Standard of 50dB(A). The EMO team visited the site in mid-February to identify the sources of this exceedance. Similarly with the RCC Plant, it was found that the windy condition during this time was the cause.
- **Owner's Site Office and Village:** The maximum noise level recorded was 62.1 dB(A) which was below the maximum Standard of 115 dB(A) in 24 hours. The average noise level (max) was recorded as 44.7 dB(A) which complied with the National Standard of 50 dB(A).
- **Main Dam:** The maximum noise level recorded was 70.2 dB(A) which was below the maximum Standard of 115 dB(A) in 24 hours. The average noise level during 22:01-6:00 was recorded as 52.82 dB(A) which was higher than the National Standard of 50dB(A). Similarly with the RCC Plant and Sino Hydro Camp, it was found that the windy condition during this time was the cause.

2.1.4 Waste Management

2.1.4.1 SOLID WASTE MANAGEMENT

The bids for the construction of the Project landfill have been opened and evaluated. The contract with the selected contractor is expected to be signed in March and construction will start in early April 2016

A consultation was held with the village chief and local villagers in Ban Hat Gnuin to discuss the expansion of the food waste collection program to other villagers. It was agreed that only one more household will be added in this program. Existing members plan to have more pigs and they are concerned that the amount of food waste to be collected will not be sufficient for additional families.

2.1.4.2 HAZARDOUS MATERIALS AND WASTE INVENTORY

On 11 February 2016, a hazardous waste inventory was jointly undertaken at the main construction sites and sub-contractor camps. Hazardous materials and waste were recorded at eight (8) sites including the TCM Camps 1 and 2, Song Da 5 Camp, Right Tunneling Workshop, Song Da 5 Workshop, V&K Camp, CVC Plant, Sino-hydro Camp and Song Da 5 CVC Plant. The TCM camp was dismantled in February 2016.

2.1.4.3 HAZARDOUS MATERIAL MANAGEMENT AUDIT

A hazardous material management audit was also conducted on 11 February 2016. It was observed that the conditions for the hazardous material management were not satisfied in terms of facility condition and waste management. These sites included RT Workshop, Song Da 5 workshop and Song Da 5 CVC Plant. The Environmental Compliance Team issued three Observations of Non-Compliances (ONCs) to three Sub-Contractors (RT Workshop, Songda 5 Workshop and Songda 5 CVC Plant) requiring each workshop to improve their hazardous waste management practices. During a Hazardous Material Management Audit conducted in February 2016, it was found that these workshops improved and the ONCs were not resolved. The EMO will follow up again during the scheduled on 03 March.

2.1.4.4 SELLING OF WASTES

During February 2016, only 238 chemical plastic containers (20 litres) from the TCM Camp were sold to the Khunmixay Factory for further processing.

2.1.4.5 COMMUNITY WASTE MANAGEMENT

2.1.4.5.1 COMMUNITY RECYCLE BANK PROGRAMME

The EMO continued to provide administrative and management support to villagers on the operations of the Community Recycle Bank at Ban Hat Gnuin. During the period from 24 July 2015 to 29 February 2016 (7 months), a total of 5,560 kg of recyclables have been sold and stored at the Community Recycle Bank (see Table 20 below). In addition, the number of villagers participating in this programme has increased constantly. By the end of February 2016, a total of 170 people (123 villagers and 47 students) held accounts at the Recycle Bank. The percentage of participation in the programme for each village is that Ban Hat Gniun 80%, Ban Hatsaykham 62% and Ban Thahuea 60% in just seven months of the Recycle Bank operation.

Table 22 below summarizes the total amount of waste traded at the Recycle Bank from July 2015 to February 2016.

TABLE 22: RECYCLABLES TRADED FROM JULY 2015 TO FEBRUARY 2016

No.	Types of Waste	Unit	Amount Sold in February	Cumulative Quantity
1	Glass	Kg	0	1,688
2	Scrap metal	Kg	65	1,619
3	Plastic bottle	Kg	234	971.5
4	Paper/cardboard	Kg	834	910
5	Aluminium/tin cans	Kg	90	371.5
6	Hydraulic/oil containers	Kg	0	11.5
7	Used batteries	Am	0	9

On 17 February 2016, a total of 234 kg of plastic bottles, 90 kg of aluminium/tin cans, 834 kg of cardboard and 65 kg of scrap metal were sold to the Khunmixay Factory for processing (See photos below). A long term contract signing for selling recyclables has also been made. The Khunmixay Factory agreed to purchase and transport all recyclables from the Community Recycle Bank and the NNP1 camps in 2016 on a regular basis.

Photograph 11: Buying Recyclables from Villagers

Photograph 12: Selling of Recyclables to the Khunmixay Processing Factory

2.2 Watershed and Biodiversity Management

2.2.1 Watershed Management

2.2.1.1 WATERSHED MANAGEMENT PLAN (WMP)

In February 2016, NNP1PC EMO team held further discussions with NNP1 Watershed Management Committee and the Watershed Management Offices on the step by step process for WMP formulation including the composition and key responsibilities of the WMP planning team. A summary table of these key information could be seen in the Annex A.

2.2.1.2 WATERSHED WORKING PLAN

It was reported to NNP1PC EMO team that the Watershed Management Fund has been disbursed to each WMO's account during the last week of January 2016. Therefore, some priority activities have been started and carried out since the first week of February 2016.

Currently, the NNP1 WMC/WMO is in the process of obtaining official acknowledgement/sign-off from the Head of WMC for the first Monthly Progress Report of February 2016. This document provides an overview of activity progresses in each month for reporting to the NNP1PC's management and ADB. It was prepared in English with NNP1PC EMO team advices. It is expected that this Report will be circulated for comments by the first week of March 2016.

A few highlights from February 2016 Progress Report could be described as follow:

a. The TOR of a GOL's consultant has been prepared by MONRE's Department of Forest Resource Management (DFRM) and discussed with NNP1PC team in mid-February 2016 prior to proceeding with the recruitment process. It is expected that the GOL consultant will be on board in March 2016.

b. The WMO of Xaysomboun Province commenced a watershed boundary survey and confirmation in parallel with a land use planning starting from the second week of February 2016. The watershed boundary survey focuses on 11 villages while land use planning exercise focusses on four villages in Xaysomboun Province. The activities were started with on-the-job training for the technical staff whose membership was nominated by WMO and Xaysomboun PONRE.

c. The WMO Bolikhamxay Province also commenced a watershed boundary survey and confirmation in the last week of February 2016 focusing on a total of five villages in Bolikhamxay Province. The activity was started with the on-the job training for the technical staff whose membership was nominated by WMO and Bolikhamxay PONRE.

The snapshot of watershed boundary survey and land use planning exercise in Xaysomboun and Bolikhamxay Provinces are shown in the following Tables.

TABLE 23: XAYSOMBOUN WATERSHED BOUNDARY SURVEY AND LAND USE PLANNING EXERCISE

No.	Description of Activity	Date	Participants
A	**Watershed Boundary Survey and Confirmation**		
1	Technical training was led by PONRE and included the following topics: o Processes of the watershed confirmation; o GPS tool and its application in GIS mapping; o GIS Database.	3 Feb 2016	7 PONRE staff; 3 PAFO staff; 3 DoNRE staff; 2 Army personals; 2 police officers; 1 Village clusters;

No.	Description of Activity	Date	Participants
			1 NNP1PC staff.
2	Watershed confirmation activity in Anouvong District (Phasangop, Kohai, Om and Thamlo villages). o The team conducted a coordination meeting with village authorities started with a brief introduction of the technical team, objectives and schedules of the fieldwork. This discussion also noted villagers' concerns and concluded the arrangement for the involvement of villagers who have a good knowledge of their village territory. o The survey team marked the boundary points according the actual physical features and compared it with the NNP1 watershed boundary map. The GPS coordinate was recorded and will further compiled and converted into GIS map.	11 to 14 Feb 2016	4 PONRE staff; 4 Army personals; 2 police officers; 1 Village Cluster; and 1 NNP1PC staff.
3	Watershed confirmation activity in Hom District [Homthat, Phalavek, Namthouay, Phoukatha, Nampoungnoy, Houaysay and Phoungou (samsao) villages] o Similar steps were applied for the activity in these villages.	15 to 22 Feb 2016	5 PONRE staff; 4 army officers; 2 police officers; 1 Village cluster; 1 NNP1PC staff.
4	The team came back to Provincial office for data compilation and reporting.	23 to 26 Feb 2016	5 PONRE staff; 4 army personals; and 2 police officers.
B	**Land use Planning Exercise**		
1	Technical training was led by PONRE and included the following topics: o Processes of the land use planning; and o Standard codes for different land categories.	3 Feb 2016	7 PONRE and 3 PAFO staff; 3 DONRE staff; 2 army personals; 2 police officers; 1 Village cluster and 1 NNP1PC staff.
2	o The team conducted a coordination meeting with village authorities at Houaysay Village started with a brief introduction of the technical team, objectives, and schedules of the fieldwork. o The team presented the results of fieldwork on 14 February 2016 and came up with an agreement with the village.	10 -14 Feb 2016	5 PoNRE and 2 DoNRE staff; a Head of DoNRE; 7 Village authorities.

No.	Description of Activity	Date	Participants
3	Team meeting with village authorities to introduce the mission objectives and team composition at Phoungou Village (Samsao). The team was divided into 3 sub-teams as the following: o A GIS team (worked in the office); o A village data information collection team (worked in office) o A ground survey team; o Result presentation: the team presented the results of fieldwork on 19 Feb 2016 afternoon and come up with agreement with village (see attached agreement).	15-18 Feb, 2016	5 PoNRE and 2 DoNRE staff; a Head of DoNRE and 7 village authorities.
4	The team completed land use planning activity in 2 villages of Houaysay and Phoungou and continued with a result presentation to Hom District Governor for acknowledgement, comments and agreement.	19 Feb, 2016	5 PoNRE and 2 DoNRE staff.
5	The team came back to Provincial office for data compilation and reporting to Provincial authority for further comments.	22 to 26 Feb. 2016	All team

TABLE 24: BOLIKHAMXAY WATERSHED BOUNDARY SURVEY

No.	Description of Activity	Date	Participants
1	The technical training was led by PoNRE. The training topic include the following: o Processes of the watershed confirmation; o GPS tool and its application in GIS mapping; o GIS Database.	22 Feb 2016	Staff from PoNRE, DoNRE, DAFO, District cabinet and NNP1PC; a village chief.
2	Planning workshop with Bolikhan District authority with participation by concerned village chief on the watershed confirmation. The workshop was co-chaired by a Deputy Head of Bolikhamxay PoNRE and a District Governor to agree on the need to demarcate the total protection zone surrounding NNP1 reservoir area for the purpose of conserving the forests and secure water discharge into the reservoir before continuing with the main NNP1 watershed confirmation.	23 Feb 2016	12 PoNRE staff; 1 DoNRE and 1 DAFO staff; 2 District cabinet staff and 11 village chiefs.
3	Conducting a consultation with villagers at Ban Hat Gnuen on the need for total protection zone confirmation and their involvements. Prior to commencing the physical boundary confirmation, the team conducted village consultations to clarify and agree on the actual area that is needed for total protection zone within their village territory.	24 Feb 2016	4 PoNRE, 1 DoNRE 1 District cabinet, and 1 NNP1PC staff; 51 villagers.
4	Regarding the watershed confirmation activity at Ban Hat Gnuen, the whole team will join this activity as on-the-job training before splitting into 2 sub-teams for the next villages.	25 to 29 Feb 2016	4 PoNRE, 1 DoNRE and 1 NNP1PC staff; 12 villagers.

2.2.2 Biodiversity Management

In February 2016, NNP1 team continued with the offset site selection process and commenced the ground truth survey in Nam Mouane Watershed Area of Bolikhamxay Province.

NNP1PC EMO Team together with Bolikhamxay PONRE conducted coordination workshop with Xaychomphone and Viengthong Districts and Village authorities during 8-11 February 2016 on the commencement of ground truth survey in the Nam Mouane Watershed Area.

Highlights from the discussion with relevant authorities are below:

1. The representatives of the relevant districts, village clusters and village authorities agreed to facilitate and cooperate with the biodiversity offset site survey that will be carried out by NNP1 Team in Nam Mouane Watershed. It was also agreed that the provincial and district military, especially the soldiers who are based at the Lao-Vietnam border in that area should be involved in the survey and future activities related to biodiversity management in case Nam Mouane Watershed is selected as the offset site. A GOL support team will be formed based on an official notification to be issued by Bolikhamxay PONRE.
2. With regard to the survey, the District authorities recommended that NNP1 should only engage national consultants in the field survery. However, it was also understood that if there was a need to involve international experts later on for further comprehensive survey then the approval needed to be issued by the relevant authorities. It was also informed that some area closer to the Lao-Vietnam border was considered as a national restricted location and so certain nationalities would not be allowed to access.
3. The ethnic minorities in the five targeted villages include Hmong, Khmer and Lao. It was recommended that the survey team strictly adhered to the local customs such as carrying out a traditional ceremony to appease the ancestral spirits prior to accessing the forest.

In parallel to this coordination workshop, the biodiversity consultant finalized his technical and financial proposal on 10 February 2016 which incorporated the review from NNP1PC team and NNP1 BAC. The survey approach is highlighted as below:

1. Village interview: the interview survey will visit six villages that are within and adjacent to the proposed offset area aiming to discuss with villagers on hunting methods (projectiles of various forms and their usage patterns during the day/night cycle; snaring and other trapping of various forms; dogs; and others) and frequencies. The quality assurance (QA)/quality control (QC) will be employed to minimize the risk of misinformation.
2. Reconnaissance walk: the reconnaissance walk forms part of the assessment of the habitat's affinity to wet evergreen forests and will prioritise the areas outside the camera trap based on village information and accessibility as assessed from the recent maps, aerial images and other information.
3. Camera trapping: the camera-trapping will determine the presence of indicator species of particular ground-dwelling large mammals and birds. The camera trapping will aim for 100 camera-traps each in its position for at least 30 days, giving a target total of about 3,000 camera-trap nights. There are two priority camera trap sampling blocks based on the spatial and topographical view of the area.

The survey team started the field work from 23 Feb 2016 after the contract amendment was settled on 22 February 2016 and is expected to provide the inception report in the second or third week of March 2016.

2.2.3 Biomass Clearance

On 1 February 2016, the NNP1PC EMO team conducted further coordination meeting with Xaysomboun Provincial Authorities regarding the commencement of biomass clearance work. The key highlights from the meeting include the following:

- Xaysomboun Provincial Authorities approved the biomass clearance Implementation Plan and will issue an official notification to allow NNP1PC commencing the biomass clearance work.
- It was recommended that the Contractor prioritizing the employment of local villagers as labor for biomass clearance. The villagers should also be allowed for rice cultivation or crop plantation on the cleared biomass areas before the inundation which will also limit the vegetation re-growth.
- It was also discussed and agreed that the felling of found valuable timber and timber with diameter more than 50 cm within 18 blocks of priority biomass clearance is the responsibility of GoL and the Biomass Clearance Contractor.
- The biomass clearance will be directly supervised by the NNP1 WMC with Xaysomboun WMO as key contact agency who will be partially involved in the coordination, organizing meetings and/or ad-hoc discussions related to concerns/issues of biomass clearance work.

An official notification from Xaysomboun Provincial authority to approve the commencement of NNP1 biomass clearance work was obtained on 15 February 2016. In following up of this official notification, NNP1PC team further conducted a coordination workshop as highlighted below:

1. Internal coordination meeting with the Social Management Office (Camp Follower/Resettlement Preparation Team and Livelihood Team) and TD (Safety Team) on 9 February 2016 to further discuss on: a) the coordination and support for labor management and awareness campaign in line with the Lao Labor Law and grievance redress mechanism procedure; b) support on NTFPs collection and rice cultivation/crop plantation on the cleared biomass area; c) options in utilization of waste biomass for biochar production; and d) orientation on safety procedures including the Codes of Conducts (dressing, driving and camp rules) and emergency procedure.
2. Village consultation meeting at three villages (Ban Nam Youak, Sopyouak and Ban Sop Phouan) that are located within and surrounding the 9 blocks of priority clearance area was conducted during 17-18 Feb 2016 with the outcomes as follow:
    - The clearance work will be started before the NTFP collection season and therefore there is no detail plan from villagers.
    - The villagers are interested to collect the remaining firewood after the first burning of cleared biomass. The villagers also confirmed the interest for rice cultivation or crop plantation in the cleared biomass areas and agreed to the terms and condition recommended by the Provincial authorities such as there shall not be land title claims and no further expansion of the cultivation area.
    - The village authority also confirmed the availability of interested villagers to be the labor for biomass clearance who will be employed by NNP1PC Biomass Clearance Contractor. The list of interested villagers will be provided before the end of February 2016.
    - Villagers expressed their concerns that some clearance areas are as important as the sources of water supply for domestic use and agriculture or to provide the shelter for their cattle. It was recommended that the discussion and agreement shall be made within these areas prior to the actual vegetation clearance work.

During the last weeks of February 2016, NNP1PC EMO Team further obtained and progressed on:

- The list of interested villagers to be the labor for biomass clearance work with the total number of more than 300 people from Ban Nam Youak, Sop Youak, and Ban Sop Phouan;
- The Contractor started the survey and demarcation of the block priority biomass clearance area from 20 February 2016. The findings will be incorporated into more updated biomass clearance maps as well as to spatially locate/map the concerns/issues raised during the village consultation meeting.

The final Contractor's SS-ESMMP for biomass clearance was received in response to comments provided by the EMO Compliance Team. This will be referred to for the technical training on compliance and monitoring work.

3 OTHER OBLIGATIONS

3.1 Environmental Protection Fund (EPF)

The PoNRE of both provinces updated the NNP1PC EMO team that the proposals to request for funding are being evaluated by the EPF technical team. The EPF visited the Xaysomboun and Bolikhamxay PoNRE during the last week of February 2016 for some clarifications and recommendations to further improve these proposals. The final revised proposals will then be processed for EPF approval.

3.2 A Nabong Substation Upgrade Due Diligence Assessment

The Draft Due Diligence Assessment was submitted to the ADB on 20 October 2015. The assessment found that the current IEE for the upgrade works (EDL, 2007) is compliant with the ADB Safeguards Policy Statement, June 2009.

A follow-up meeting with EDL was organised on 26 February 2016. EDL informed that the bid for the contractor selection has been opened by Nam Ngiep 2, the conclusion of the selection will be informed to DEB soon.

NNP1PC is continue to work on the draft due diligence report addressing comment from the ADB.

3.3 A 115kV Transmission Line IEE Due Diligence Assessment

On 30 October 2015, NNP1PC presented the DDA requirements to the Department of Energy Business, EDL. At that meeting, the EDL provided a tentative approval to assist the NNP1PC achieve the project responsibility on the DDAs.

Two follow up meetings with EDL were held on February 22 and 26 to discuss the development of the 115 kV TL. The field visit for the Initial Environmental Examination (IEE) was conducted in November 2015. The existing alignment is still going through the Houy Ngoua Provincial Protected Area, NNP1 PC advised EDL to recheck the section with Bolikhamxay DoNRE on this issue. It was confirmed that the 115 kV IEE will be approved by DoNRE and NNP1PC may expect to receive the IEE during the first week of April 2016

3.4 Independent Monitoring Agency (IMA) TOR and Procurement

MONRE has informed NNP1 at the end of February of the completion of IMA establishment, a contract has been submitted for NNP1PC co-signature, the first disbursement is in the process and expected to be sometime in March, and the first IMA mission is expected as soon as disbursement is completed.

3.5 EMU Mission

The EMU representatives from Bolikhamxay Province visited the NNP1 Project site from 17-19 February 2016. This mission was a follow up of the previous environmental concerns raised during January mission which most of them were resolved and improved including: (i) drainage systems and sediment pond at the RT's camp; (ii) a sediment pond of a batching plant at the temporary bridge construction; (iv) temporary waste pit at the SECC camp; (v) a sediment pond of SongDa#2 camp and Sinohydro camp and; (vi) a sediment pond of the aggregate batching plant.

Photograph 13-14: Sites Inspection by the EMU Bolikhamxay Province During 17-19 February 2016

During this February mission, key environmental concerns raised by the EMU are: i) a drainage system at the workshop area of the bridge construction work and ii) the sediment pond of the SongDa#02 camp. The EMO acknowledged these concerns and will continue to monitor their corrective actions and report the progresses in March 2016

3.6 Other Support Programs

3.6.1 Integrated Spatial Planning Programme

The ISP planning exercise in Thathom District was completed in the middle of February 2016 through community mapping exercise with the key outcomes as the following:

- Compilation of existing environmental and social related information at the District level and the spatial identification of the potential and future District and Provincial Development Plans;
- Preparing a matrix of rapid environmental and social assessment;
- Working draft of a District ISP report.

The DEQP plans to complete the District planning exercise at Hom and Anouvong Districts together with the other two districts outside NNP1 watershed area (Longchen and Longxan) in the second week of March 2016.

ANNEXES

ANNEX A:

TABLE A 1. THE OVERVIEW OF ACTIVITIES, TIMING AND EXPECTED RESULT OF WMP FORMULATION

Activities	Timing	Expected Results
Inception Workshop with DFRM, WMOs, NNP1 Team	Feb 2016	Agreement on scope of work and roles and responsibilities on the preparation of the Nam Ngiep 1 Watershed Management Plan
Planning Workshop with DFRM, WMOs, NNP1 Team and the Watershed Management Consultant	Mar 2016	Objectives, Outline and Budget of the Nam Ngiep 1 Watershed Management Plan
Data and information collection and analysis	Mar-May 2016	Baseline profile including GIS layers and maps, and displays of socioeconomic and environmental data NNP1 watershed management stakeholder profiles Initial identification of planning issues
Watershed Management Workshop with WMOs and NNP1PC Team: Identification, mapping and analysis of potentials and development and mitigation measures	May 2016	Outline of watershed management planning issues, measures and regulations to deal with the issues
Stakeholder Watershed Management Workshop: Present outline of the plan and obtain comments and commitments from the stakeholders	Jun 2016	Broad stakeholder agreement on the outline of the watershed management planning issues, measures and division of responsibilities
External review of the outline of the watershed management planning issues, measures and division of responsibilities	Jun 2016	Comments from external reviewers on the planning issues, measures and division of responsibilities
Watershed management studies, field work and assessments	May-Jun-Jul 2016	Watershed management measures and regulations incorporating comments from the external reviewers
Write-up of the draft watershed management plan and the draft regulations (WMO and NNP1PC Team)	Jul 2016	Draft Nam Ngiep 1 Watershed Management Plan and the draft Nam Ngiep 1 Watershed Management Regulations
Watershed Management Workshop: Presentation and consultation on the draft watershed management plan and regulations among key watershed management agencies	Jul 2016	Agreement among the key stakeholders on the draft Nam Ngiep 1 Watershed Management Plan and the draft Nam Ngiep 1 Watershed Management Regulations
Submit the draft Nam Ngiep 1 Watershed Management Plan and the draft Nam Ngiep 1 Watershed Management Regulations to ADB and to external reviewers	31 Jul 2016	Comments from ADB and external reviewers on the draft watershed management plan and regulations
Further watershed management studies, field work and assessments including on forest, water, land use, biodiversity, fisheries, socioeconomic and business development	Aug - Sep 2016	Revised draft Watershed Management Plan and Regulations also incorporating agreed comments from ADB and external reviewers
Stakeholder Watershed Management Workshop: Present the revised draft Watershed Management Plan and Regulations, and obtain comments and commitments from the stakeholders	Sep 2016	Comments and broad stakeholder agreement on the revised draft Watershed Management Plan and Regulations
Write-up of the final draft Watershed Management Plan and the final draft Regulations (WMO and NNP1PC Team)	Sep-Oct 2016	Final Draft Nam Ngiep 1 Watershed Management Plan and the Final Draft Nam Ngiep 1 Watershed Management Regulations
Submit the final draft Nam Ngiep 1 Watershed Management Plan and the final draft Nam Ngiep 1	Oct 2016	

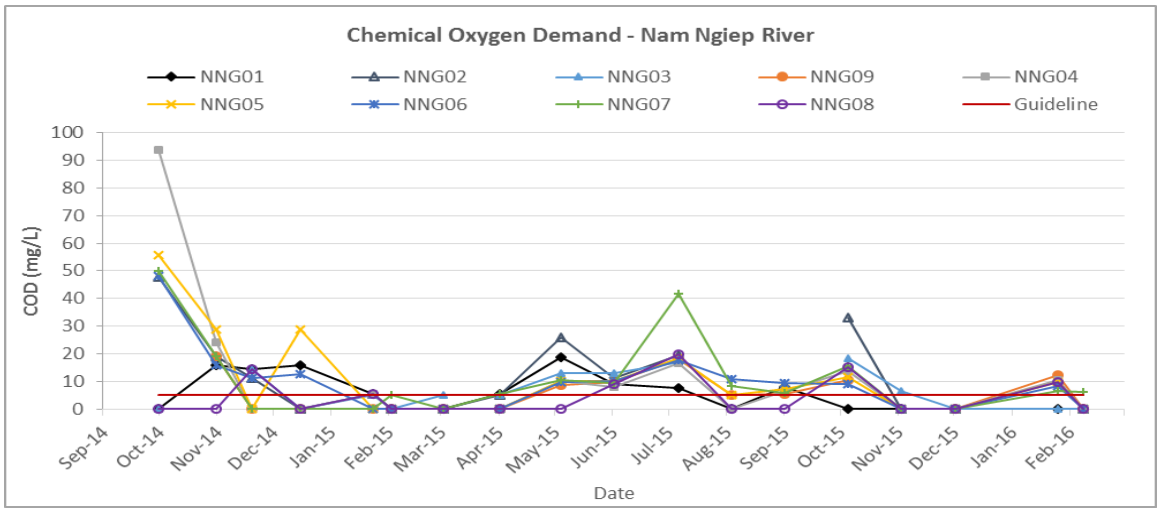
Activities	Timing	Expected Results
Watershed Management Regulations to ADB and to external reviewers		
Meeting with DFRM, WMOs and NNP1PC to present and approve the final draft Nam Ngiep 1 Watershed Management Plan and the final draft Nam Ngiep 1 Watershed Management Regulations incorporating agreed comments from ADB and external reviewers	Oct 2016	Final Nam Ngiep 1 Watershed Management Plan and the final draft Nam Ngiep 1 Watershed Management Regulations
Further consultations and legal drafting of the final draft Nam Ngiep 1 Watershed Management Regulations	Nov-Dec 2016	Final Nam Ngiep 1 Watershed Management Regulations
Endorsement by the Provincial Governors of the final Nam Ngiep 1 Watershed Management Regulations	Jan 2017	Final Nam Ngiep 1 Watershed Management Regulations endorsed by the Provincial Governors

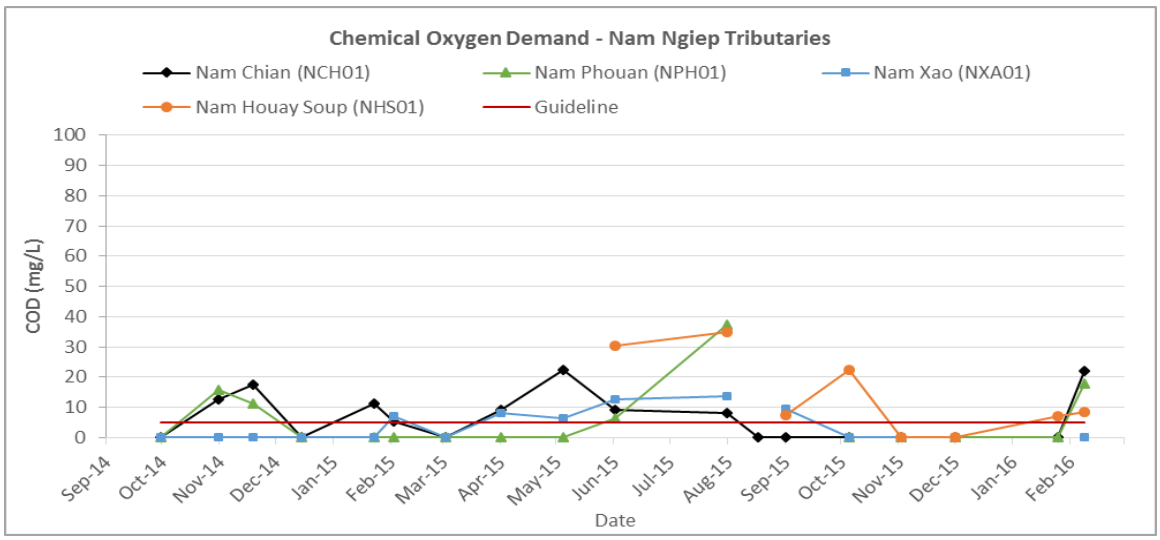
TABLE A 2. WATERSHED MANAGEMENT PLANNING TEAM

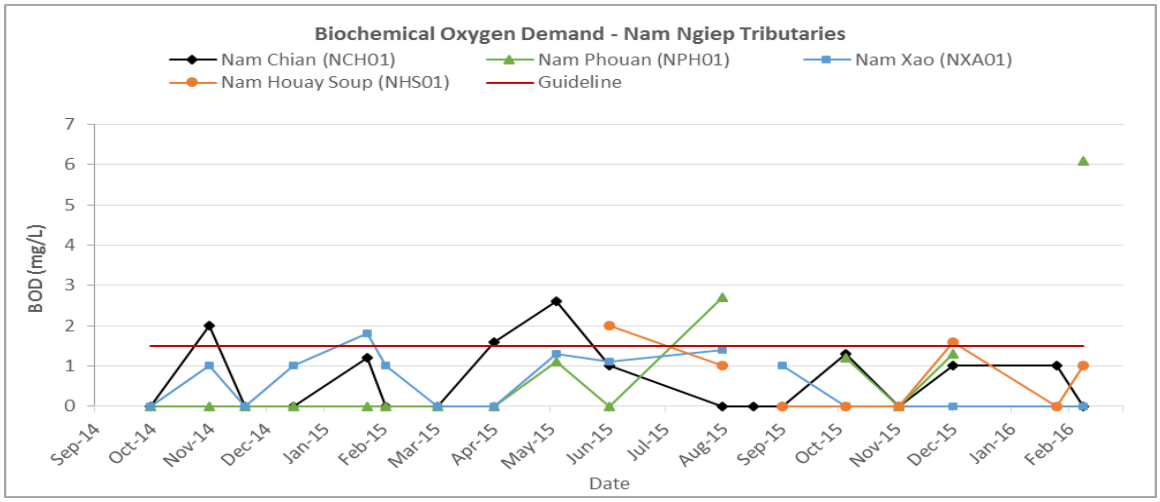
GOL TEAM		
No.	**Member composition**	**Key tasks**
1.	DFRM Deputy head of DFRM	- Overview the planning process and coordination work with relevant agencies at national and provincial level - Endorse the formulated plan proposed by WMO for the approval
	DFRM Technical staff (3 persons)	- Manage GOL consultant - Provide inputs on the formulation of strategic management plan - Review the plan - Assist GOL consultant on the workshop/consultative discussion - Coordinate with XSB and BLX WMO team
2.	The Heads of the Watershed Management Offices of Borikhamxay and Xaysomboun	- Key decision making on the workshop/consultative discussion at provincial, district, and/or village level - Supervise and guide the WMO technical team throughout the planning process - Endorse the formulated plan to be proposed to DFRM
	Four technical staff from each of the Watershed Management Offices of Borikhamxay and Xaysomboun	- Propose practical management action and estimated budget of the activities up to drafting the plan - Provide inputs and review throughout the formulation of WMP - Facilitate and participate in workshop or consultation discussion - Working on day to day basis with local stakeholders, NNP1 team and relevant government agencies
3.	GOL Consultant Total member: 1 person	- Review existing information - Plan formulation (information gap filling, define key objective, formulate detail management activities including timeframe, budget and monitoring framework) - Leading the workshop/consultative discussion with relevant stakeholder - Assist WMC/WMO in drafting the plan

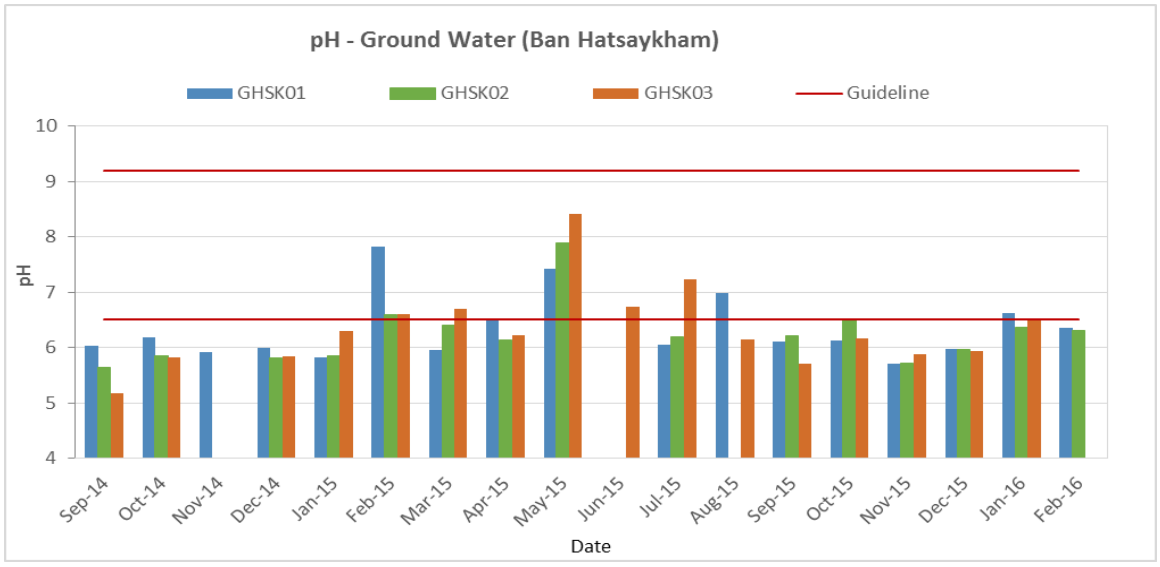
NNP1PC TEAM		
No.	**Member composition**	**Key tasks**
1.	Advisor ESD Senior Environment Specialist	- Provide supervision and guidance particularly to NNP1 team - Provide technical assistant for plan integration process - Provide technical review on the formulated plan - Assist team coordinator - Participate in the workshop or consultative discussion
2.	Managers / Coordinators: EMO Manager and Deputy Manager	- Manage and supervise the NNP1PC technical teams - Provide technical inputs and reviews throughout the planning process - Assist NNP1 technical team and GOL Team and participate in workshop or consultative discussion - Ensure smooth coordination between NNP1, GOL and other relevant stakeholders including ADB, IAP, BAC, and LTA - Review the progress report by NNP1 technical team and provide the updates to NNP1 management and relevant reviewers
3.	Watershed Team (1 Team Leader, 1 Senior officer, 2 Officers)	- Provide necessary data/information and technical inputs for the plan formulation particularly on thematic area of landscape management, forestry, hydrology, and/or natural resource management - Lead fishery consultant in providing the technical inputs for plan integration process - In collaboration with other sub-teams (biodiversity, environmental monitoring and GIS) conduct day to day coordination/collaboration work with GOL team - Summarize the progress update from other sub-teams and provide regular report to team coordinator
4.	Biodiversity (1 Team Leader, 1 Senior Officer, and 1 Officer)	- Provide necessary data/information and technical inputs for the plan formulation particularly on thematic area of biodiversity and conservation management - Lead biodiversity consultant in providing the technical inputs for plan integration process
5.	Environmental Monitoring (2 Officers)	- Provide Project environmental monitoring data/information necessary for plan formulation
6.	Socio-economic team (1 DM and 1 TL)	- Provide necessary data/information and technical inputs for the plan formulation particularly on socio-economic aspect
7.	GIS team (1 Senior Officer, 1 Officer)	- Information compilation into database - Producing the GIS maps - Provide technical opinion on the landscape, land use/land cover within the watershed area

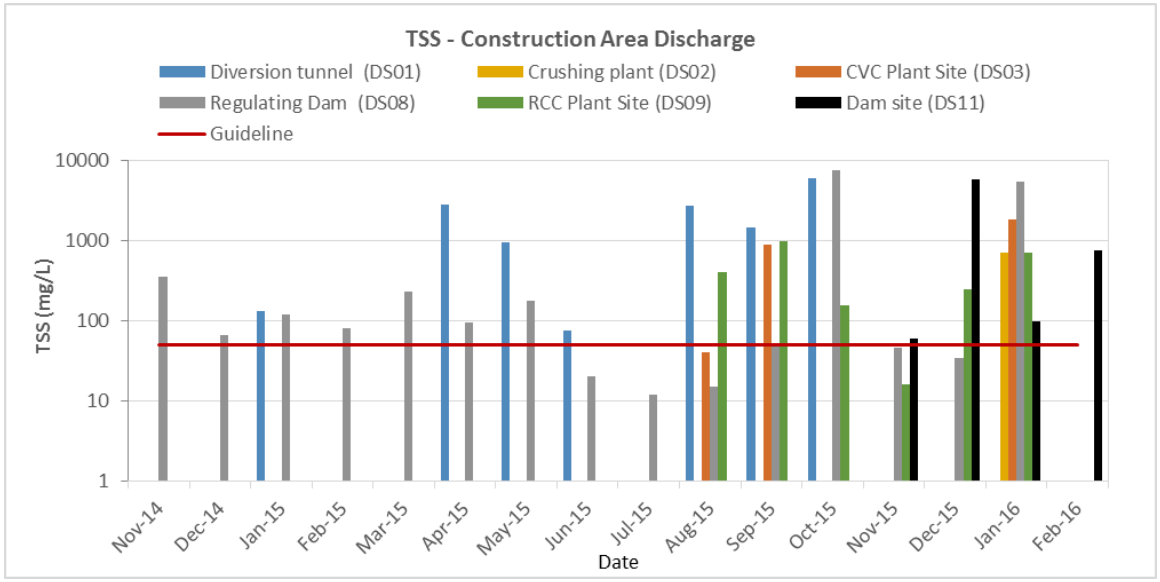
ANNEX B: TREND OF WATER QUALITY MONITORING RESULTS FROM OCTOBER 2015 – FEBRUARY 2016

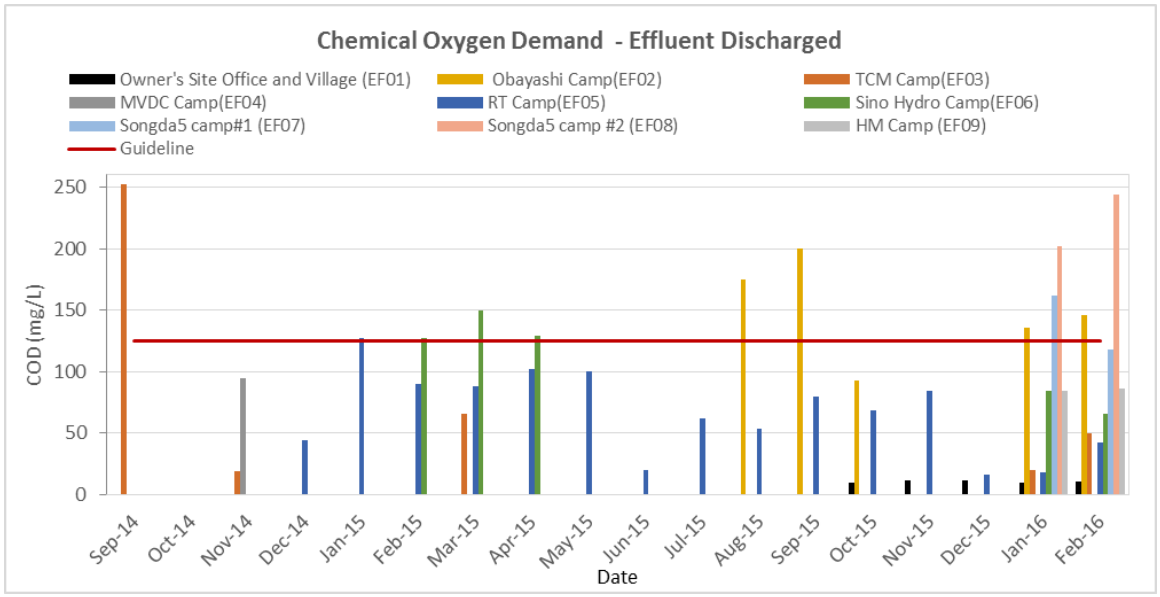


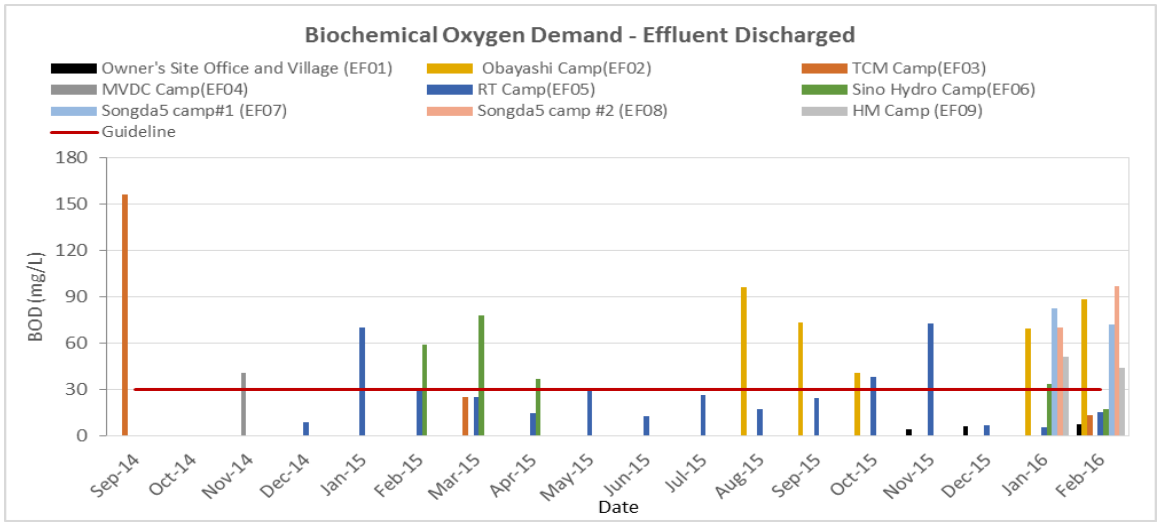


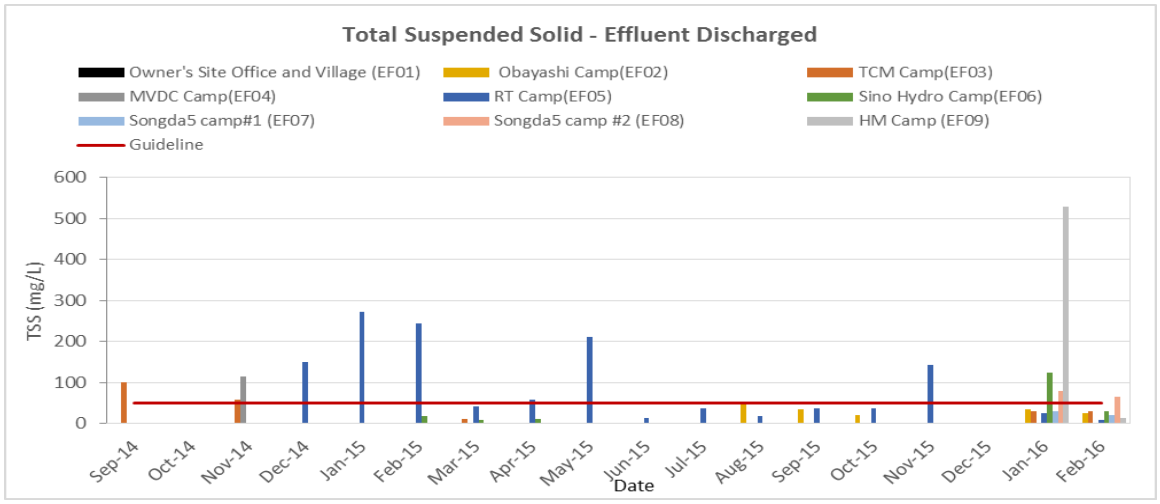


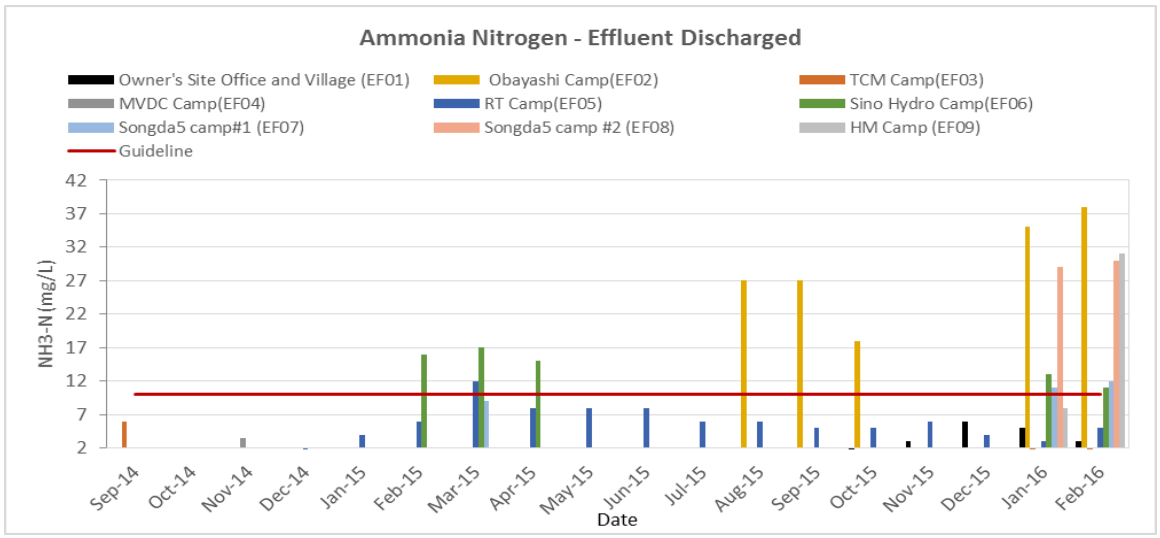

pH - Ground Water (Ban Hatsaykham)
GHSK01
GHSK02
GHSK03
Guideline
pH
Date


TSS - Construction Area Discharge
Diversion tunnel (DS01)
Crushing plant (DS02)
CVC Plant Site (DS03)
Regulating Dam (DS08)
RCC Plant Site (DS09)
Dam site (DS11)
Guideline
TSS (mg/L)
Date


Chemical Oxygen Demand - Effluent Discharged
Owner's Site Office and Village (EF01)
Obayashi Camp(EF02)
TCM Camp(EF03)
MVDC Camp(EF04)
RT Camp(EF05)
Sino Hydro Camp(EF06)
Songda5 camp#1 (EF07)
Songda5 camp #2 (EF08)
HM Camp (EF09)
Guideline
COD (mg/L)
Date


Biochemical Oxygen Demand - Effluent Discharged
Owner's Site Office and Village (EF01)
Obayashi Camp(EF02)
TCM Camp(EF03)
MVDC Camp(EF04)
RT Camp(EF05)
Sino Hydro Camp(EF06)
Songda5 camp#1 (EF07)
Songda5 camp #2 (EF08)
HM Camp (EF09)
Guideline
BOD (mg/L)
180
150
120
90
60
30
0
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Date


Total Suspended Solid - Effluent Discharged
Owner's Site Office and Village (EF01)
Obayashi Camp(EF02)
TCM Camp(EF03)
MVDC Camp(EF04)
RT Camp(EF05)
Sino Hydro Camp(EF06)
Songda5 camp#1 (EF07)
Songda5 camp #2 (EF08)
HM Camp (EF09)
Guideline
TSS (mg/L)
600
500
400
300
200
100
0
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Date


Ammonia Nitrogen - Effluent Discharged
Owner's Site Office and Village (EF01)
Obayashi Camp(EF02)
TCM Camp(EF03)
MVDC Camp(EF04)
RT Camp(EF05)
Sino Hydro Camp(EF06)
Songda5 camp#1 (EF07)
Songda5 camp #2 (EF08)
HM Camp (EF09)
Guideline
NH3-N (mg/L)
42
37
32
27
22
17
12
7
2
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
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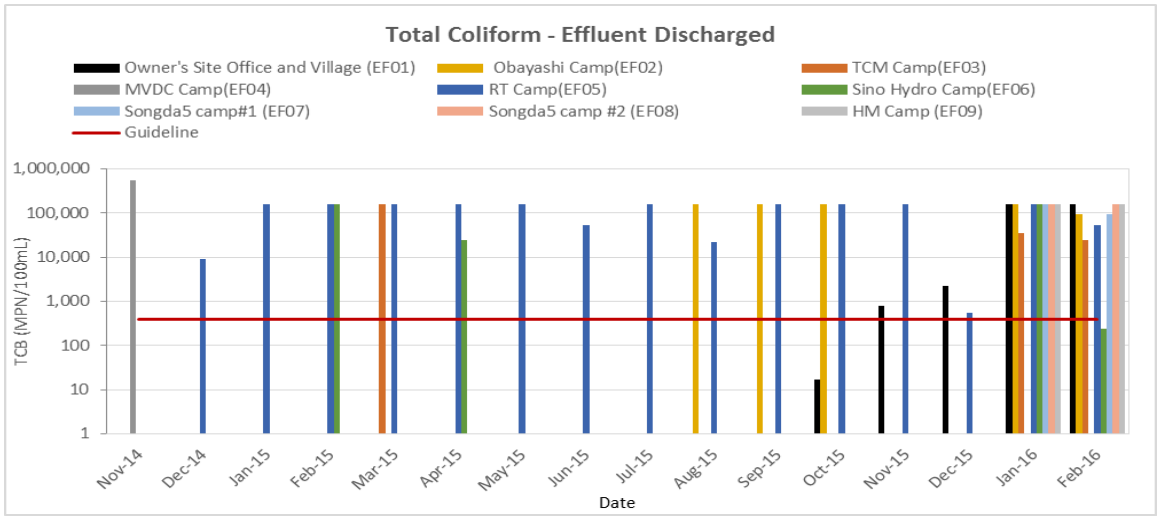
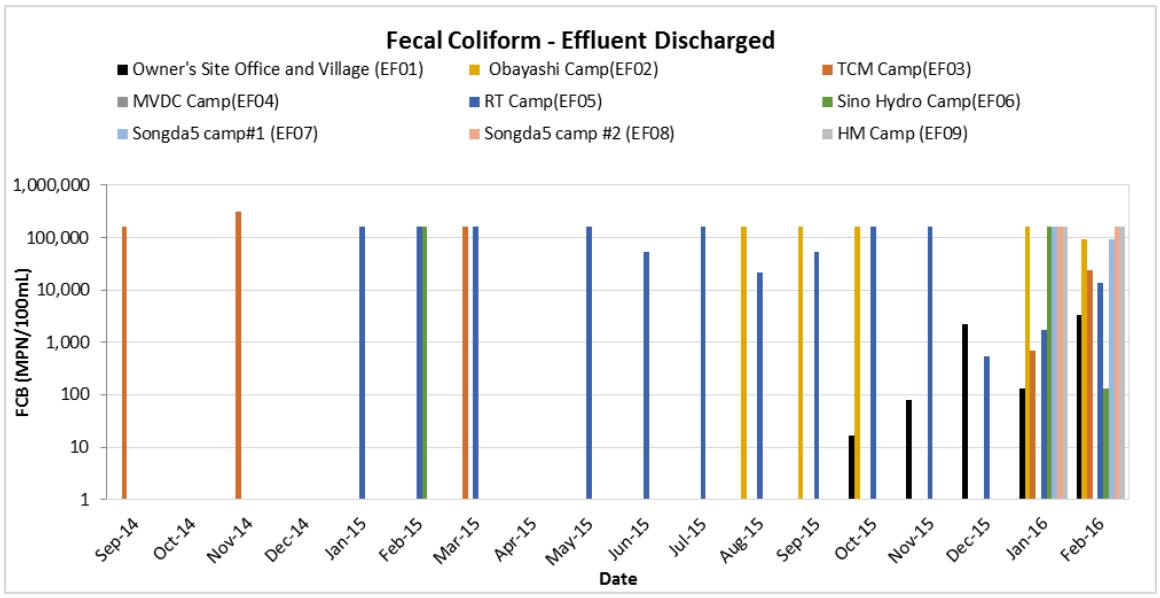
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Date


Total Coliform - Effluent Discharged
Owner's Site Office and Village (EF01)
Obayashi Camp(EF02)
TCM Camp(EF03)
MVDC Camp(EF04)
RT Camp(EF05)
Sino Hydro Camp(EF06)
Songda5 camp#1 (EF07)
Songda5 camp #2 (EF08)
HM Camp (EF09)
Guideline
TCB (MPN/100mL)
1,000,000
100,000
10,000
1,000
100
10
1
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Date


Fecal Coliform - Effluent Discharged
Owner's Site Office and Village (EF01)
Obayashi Camp(EF02)
TCM Camp(EF03)
MVDC Camp(EF04)
RT Camp(EF05)
Sino Hydro Camp(EF06)
Songda5 camp#1 (EF07)
Songda5 camp #2 (EF08)
HM Camp (EF09)
FCB (MPN/100mL)
1,000,000
100,000
10,000
1,000
100
10
1
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Date

ANNEX C: HAZARDOUS MATERIAL AUDIT JUNE THROUGH TO FEBRUARY 2016

Site		Songda Camp			TCM fuel station and HazMat storage			RT work shop			V&K Camp			Songda Work shop			Sino hydro camp			Sino hydro fuel station			Songda CVC Plant		
Month		**12**	**01**	**02**	**12**	**01**	**02**	**12**	**01**	**02**	**12**	**01**	**02**	**12**	**01**	**02**	**12**	**01**	**02**	**12**	**01**	**02**	**12**	**01**	**02**
Storage area																									
1	Floor of storage area is impervious	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2	Fully bunded with capacity >120% of combined container capacity	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3	Bunds in adequate condition	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
4	Closed storage protected from rainfall and flood level	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
5	Storage area is well ventilated	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
6	Oil trap linked to the storage area	√	√	√	√	√	√	X	X	X	√	√	√	NA	NA	NA	√	√	√	√	√	√	NA	NA	NA
7	Located not close to camp, office and watercourse	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
8	Storage has the fence and lock	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
9	Incompatible hazardous materials and chemicals stored separately	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
10	Explosives stored in underground facilities or in appropriate bunding	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11	Explosive storage facilities are locked and access is restricted	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Containers																									
1	Containers leak-proof and in good condition	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
1	Metallic (Iron) containers without corrosion (rust)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
1	Container chemically compatible with material stored	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
1	Container closed unless material added or used	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
1	Refuelling equipment without leakages observed	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Labels																									
1	Restricted access signs outside facility	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X	√	√	√	√	√	√	X	X	X

	Site	Songda Camp			TCM fuel station and HazMat storage			RT work shop			V&K Camp			Songda Work shop			Sino hydro camp			Sino hydro fuel station			Songda CVC Plant		
	Month	12	01	02	12	01	02	12	01	02	12	01	02	12	01	02	12	01	02	12	01	02	12	01	02
18	Display of labels with words “Hazardous product/waste”	√	√	√	-	-	-	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
1	Label describes hazards for users	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
2	PPE request sign posted within premises	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
21	Procedures for HazMat handling posted within premises	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
22	Procedures for emergency response posted within premises	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	NA	NA	NA	√	√	√	X	X	X
Safety																									
2	Firefighting equipment available and controlled	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
24	Firefighting equipment is sited appropriately for ease of access	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
2	Staff wear PPE on site	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2	Staff trained for HazMat handling and spill response	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Spill response																									
27	Spill response kits readily available with adequate supply	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	NR	NR	NR	√	√	√	X	X	X
28	Safe storage is provided for contaminated materials after spill response	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
29	Plan is in place for removal and final disposal of contaminated materials	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X
Documentation																									
3	HazMat Register in place	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3	HazMat Register up-to-date	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3	MSDS sheets readily accessible	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	X	X	X

Annex D: Hazardous Material Inventory February 2016

No.	Site	TCM Camp	Songda camp	RT camp	Songda workshop	V&K camp	CVC plant	Sino hydro fuel station	Songda cvc plant	Total
1	Diesoline (L)	2,500L	25,000L	3,789L	0	7,000L	0	0	0	38,289L
2	Gasoline (L)	40L	0	0	0	0	0	0	0	40L
3	Hydraulic oil	5sd,3co	14d	2d	2d	6sd	0	0	2d	20d,11sd, 3co
4	Engine oil	0	9d	2d	0	1d	0	0	3d	13d
5	Gear and axle oil	4co	1d	4d	0	0	0	0	2d	7d,4co
6	Brake fluid/break oil	0	16co	17co	0	0	0	0	0	33co
7	Transmission oil	0	0	2d,6co	3d	0	0	0	1d	6d,6co
8	Lubricant	0	0	0	0	0	0	0	0	0
9	Air Compressor oil	0	2d,22sd	0	0	0	29d	0	0	31d,22sd
10	Bearing circulating oil	0	0	0	0	0	0	0	0	0
11	Grease	3sd	3d	3d	3sd	2sd	0	0	0	6d,8sd
12	Asphalt	0	0	0	0	0	0	0	0	0
13	No specific type of fuel	0	0	0	0	0	0	130d	0	130d

Note: d = drum (contain 200 l/unit),
sd = small drum (contain 20 l/unit)
ca = can (contain 1-5 l/unit)
co = container (contain 1-10 l/unit)
u = unit
b = bag
bo = bottle (contain 1-5 l/unit)

ANNEX E: HAZARDOUS WASTE INVENTORY FEBRUARY 2016

No.	Site	TCM 1&2 Camp	Songda camp	RT camp	Songda workshop	V&K camp	CVC Plant	Sino hydro fuel station	Songda cvc Plant	Total
1	Used oil/ hydraulic fluids	11co	1d	4d	2d	1d	1d	3sd	0	9d,3sd,11co
2	Used oil mixed with water	0	0	2d	0	0	0	0	0	2d
3	Other petroleum residues	0	0	0	0	0	0	0	0	0
4	Empty used oil drum/container	9sd	1d,2sd	5d	1d,8sd	2d	0	3d	5d	17d, 19sd
5	Used oil filters	0	0	10u	2u	6u	0	0	0	18u
6	Contaminated soil, sawdust and concrete	0	0	11b	3b	2b	0	0	0	16b
7	Contaminated textile and material	0	0	2b	3b	2b	0	0	0	7b
8	Contaminated used rubber (hydraulic) hose	0	0	2d	0	0	0	0	0	2d
9	Contaminated grease	0	0	0	0	0	0	0	0	1d
10	Empty contaminated grease drum/container	0	0	0	1d	0	0	0	1d	2d
11	Empty contaminated bitumen drum/container	80d	0	0	0	0	0	0	0	80d
12	Used tire	13u	0	3u	60u	10u	0	9u	11u	106u
13	Chemical mixed with water and chemical waste	0	0	0	0	0	0	0	0	0
14	Empty used chemical drum/container	528sd	0	0	0	40d	15d	0	0	55d,528sd
15	Solvent residues and containers	0	0	0	0	0	0	0	0	0
16	Acid and caustic cleaners	0	0	272bo	0	0	0	0	0	272bo
17	Empty paint and spray cans	5ca	0	0	0	0	0	0	0	5ca

18	Used battery	7u	0	0	4u	0	0	0	0	11u
19	Ink cartridge	0	0	0	0	0	0	0	0	0
20	Halogen/ fluorescent bulbs	0	0	0	0	0	0	0	0	0
21	Electrical and electrical waste	0	0	0	0	0	0	0	0	0
22	Pesticide waste	0	0	0	0	0	0	0	0	0
23	Infectious and medical waste	0	0	0	0	0	0	0	0	0
24	Other	0	0	0	0	0	0	0	0	0

Note: d = drum (contain 200 l/unit), u = unit
sd = small drum (contain 20 l/unit) b = bag
ca = can (contain 1-5 l/unit) bo = bottle (contain 1-5 l/unit)
co = container (contain 1-10 l/unit)