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Environmental Protection Agency

Ensuring environmental protection & conserving biodiversity

Field Report of an Alleged Water Pollution from BMMC's Operation in NLGM, Grand Cape Mount County

Presented by
The Investigation Team
May 27, 2022

Ensuring Sustainable Environmental Management

Outline

- Introduction
- Methodology
- Key findings
- Conclusion
- Recommendations

INTRODUCTION

- During the early morning hours of 24 May 2022, the attention of the EPA was drawn to a publication in different media outlets of an alleged water pollution of the Marvoe River by Bea Mountain Mining Corporation (BMMC) that resulted to the death of aquatic species observed my residents of Jekandor Village in Grand Cape Mount County.

- As a result, residents of Jakandor and nearby towns along the river basin made several calls to the EPA for an immediate intervention into the situation.
- By 10:00 am, on the same day, the Agency received an Incident Notice from BMMC- corroborating the reported deaths of fish and requesting for an independent investigation from EPA
- This compelled the EPA to immediately dispatch a team of technicians to the affected communities and BBMC facility in NLGM on **25 May 2022** to conduct a full-scale investigation to ascertain the veracity of the allegation, assess water quality and trace the source of the pollution, if established.

EPA-TEAM

No	Name	Position	Role
1	Randall M. Dobayou II	Deputy Executive Director	Administrative Team Head
2	John K. Jallah Jr	Manager, C & E Department	Technical Team Lead / Environmental Engineer
3	Rafael S. Ngumbu	Manager, ERRS Department	Lead Researcher/Analytical Chemist
4	Daoda S. Carlon	Assist. Manager, ESIA Unit	Lead ESIA Expert
5	R. Baiyezenah W. Brown	Assist. Manager, Environmental Unit	Community Engagement / Public Health Practitioner
6	Jerry T. Toe	Focal Point, SC-POPs	Chemical Management / Organic Chemist
7	Lenn Gomah	Laboratory Technician	Lead Technician / Environmental Chemist
8	Tennemah Coleman	Assist. Manager, Outreach & Training	Community Engagement / Social Outreach Expert
9	Sanford V. Daniels	GIS Coordinator	GIS Analyst
10	Cliford A. Forte	Remediation Officer	Mitigation Assessment / Geologist
11	Wellington Ben	County Head Inspector	Environmental Scientist
12	Armah Konnah, Adam Cisse & Elijah Gleekan		Drivers

METHODOLGY

S/N	Description	TOR
1	Desktop Review	BMMC Permits and previous monitoring and incident reports were reviewed
2	Community Engagement (Prior Notification)	The commissioner of Gola Konneh District and leadership of incident-affected communities were contacted via phone prior to the team's visit; BMMC was also notified of the team's visit
3	Community Entry	A town hall meeting was convened in Jakandor (Representatives of the incident-affected communities and BMMC were in attendance
4	Social Interviews	Representatives of both parties were interviewed, and notes were taken
5	Water Quality Sampling and Physical examination of dead aquatic species	Water samples were collected from total of eight (8) locations pursuant to the objective of the investigations; Physical observations were also carried out on dead aquatic species
6	Insitu analysis	Selected Physical parameters were assessed onsite
7	Geo-informatics	Geospatial analysis and collection of drone imagery were carried out
8	Exitu analysis	Selected chemical parameters were analyzed at the EPA Laboratory

Key Representatives in the opening conference

No.	Name	Institution/ Town	Position
1.	Mr. Alieu Kamara	Jekandor	Chief Imam
2.	Mr. Jimmy Kamara	Jekandor	Chief Elder
3.	Md. Jima Papai	Jekandor	Women Chair Lady
4.	Mr. Alieu Gataweh	Jekandor	Youth Chairman
5.	Mr. Tansel Ozercan	BMMC	Environmental Superintendent
6.	Mr. Morris Gontor	BMMC	Sr. Environmental Supervisor
7.	Mr. Boima Freeman	BMMC	Community Relations Officer

KEY FINDINGS from Social Interviews

- The team confirmed the death of some aquatic species, including tilapia, pipe fish and crawfish, in the Marvoe River;
- The Jekandor Village expressed suspicion of two unusual visits made by BMMC's environmental team (within few hours apart), to the Marvoe River on **Saturday , 21 May 2022;**
- During the meeting, BMMC admitted observing dead fish at EDMP-2 on **Saturday, 21 May 2022 at about 8:00 am** but withheld said information from both the community and the Agency until downstream communities first started observing dead fish species on **Monday, 23 May 2022;**
- BMMC failed to notify the Agency within the 72 hours threshold as required by its operational permit;
- Physical observation of the dead fish showed that some fish died of asphyxiation (deprivation of dissolved oxygen);
- BMMC voluntarily provided food and water to the incident-community residents after the community's observation on **Monday, 23 May 2022**.
- BMMC's filed an incident notice to the EPA on **24 May 2022 at 10:00 am (NLGM-ENV-2022-1)** concerning the situation ;
- Jekandor has a total population of 250 persons with five hand pumps, two of which are functional.
- Two other communities presumed to be affected down stream are Madina and Korma according to residents of Jekandor.

KEY FINDINGS from Social Interviews & Observations

- Jakandor Community is concerned about ripple effect of pollution, as the Marvor river is a major connecting tributary to the Mafa river which drains along several villages up to Robertsport; They appealed to Government to prevail on the company to relocate them or provide basis social amenities (road, safe drinking water, alternative livelihood)
- Communities pledged to work with the Government, through the EPA, to find a sustainable solution to this problem as they expressed weariness of the frequency of the same situation over time;
- No signs of life was observed in the Mavor river between EDMP2 and Jakandor

Water Quality Sampling

- Water samples were collected from 8 locations within the study area; duplicate samples were collected by BMMC for internal analysis;
- Samples were collected from upstream(Penstock 6), midstream (EDMP-2) and downstream of the TSF, using the grab technique. Insitu readings were taken;
- Samples were collected into pre-treated sample bottles, labeled for easy identification and sealed.
- The samples were kept in ice chest with freeze packs.
- Appropriate chain of custody forms were completed in line with the Agency's standard for documentation of samples.
- All samples were transported to the EPA laboratory for analysis

Sampling Points

Abbreviated Code	Sample Code	Sample Source	Sampling Location
SP1	TSFR-A	TSF Return Pond Outlet	New Liberty TSF Return
SP2	TSFR-B	TSF Return Effluent	Beyond New Liberty TSF Return
SP3	TSFR-C	TSF Return Effluent	Beyond New Liberty TSF Return
SP4	EDMP-2A	Marvoe Creek	EDMP-2A NL Monitoring Point
SP5	EDMP-2B	Marvoe Creek	EDMP-2B NL Monitoring Point
SP6	SP1-J	Hand Pump	Jakandor
SP7	JAKSW1	Mavor Creek	Jakandor
SP8	Penstock 6 FW	Penstock 6 (Control)	Marvoe Diversion

Laboratory Results (figures in bold are above permissible limits; NS = not stated)

Parameter	Unit	Methodology	TSFR-A	TSFR-B	TSFR-C	EPA Limit	LWQS-Class -III
pH	-log H	PH Meter insitu	6.64	6.90	6.93	5.5-9.0	5.5-9.0
Free Cyanide	mg/L	Colorimetry DR 6000	**0.199**	**0.260**	**0.243**	0.05	≤ 0.05
Arsenic	mg/L	Palintest (Arsenator)	**1.15**	**1.35**	**1.50**	NS	≤ 0.20
Iron	mg/L	Colorimetry DR 900	**2.30**	**2.82**	**3.90**	2.0	≤ 2.0
DO	mg/L	DO Meter	**4.89**	**4.93**	5.01	NS	≥ 5.0
Copper	mg/L	Colorimeter DR 890	**0.370**	**0.291**	**0.310**	0.2	≤ 0.2
Nitrate	mg/L	Colorimeter DR 890	32.80	31.93	25.91	80	≤ 80
Sulfate	mg/L	Colorimeter DR 890	13.0	7.2	6.3	250	≤ 250
Mercury	mg/L	Cold Vapor AAS	<0.001	<0.001	<0.001	NS	≤0.01

Laboratory Results (figures in bold are above permissible limits; NS = not stated)

Parameter	Unit	Methodology	EDMP-2A	EDMP-2B	EPA Limit	LWQS-Class - II
pH	-log H	PH Meter insitu	6.40	6.89	6.0--9.0	6.0-9.0
Free Cyanide	mg/L	Colorimetry DR 6000	**0.039**	**0.031**	0.022	≤ 0.02
Arsenic	mg/L	Palintest (Arsenator)	<0.02	<0.02	NS	≤ 0.05
Iron	mg/L	Colorimetry DR 900	1.08	0.51	1.5	≤ 1.5
DO	mg/L	DO Meter	5.22	5.12	NS	≥ 5.0
Copper	mg/L	Colorimeter DR 890	0.074	0.055	0.1	≤ 0.01
Nitrate	mg/L	Colorimeter DR 890	21.74	23.82	60	≤ 60
Sulfate	mg/L	Colorimeter DR 890	2.2	1.9	200	≤ 200
Mercury	mg/l	Cold vapor AAS	<0.001	<0.001	NS	≤0.01

Laboratory Results (cont'd)

Parameter	Unit	Methodology	Hand pump	Marvoe Creek	Penstock 6 (Control)	LWQS-Class - II
pH	-log H	PH Meter insitu	6.24	6.34	7.11	6.0-9.0
Free Cyanide	mg/L	Colorimetry DR 6000	<0.001	**0.027**	0.003	≤ 0.02
Arsenic	mg/L	Palintest (Arsenator)	<0.02	<0.02	<0.02	≤ 0.05
Iron	mg/L	Colorimetry DR 900	0.16	1.14	0.28	≤ 1.50
DO	mg/L	DO Meter	N/A	5.37	7.13	≥ 5.0
Copper	mg/L	Colorimeter DR 890	<0.005	0.009	<0.005	≤ 0.01
Nitrate	mg/L	Colorimeter DR 890	0.96	0.62	0.78	≤ 60
Sulfate	mg/L	Colorimeter DR 890	<0.005	<0.005	<0.005	≤ 200
Mercury	mg/L	Cold Vapor AAS	<0.001	0.001	<0.001	≤ 0.01

CONCLUSIONs

- The team observed evidence of dead, decomposed fish species, including tilapia, brycinus imberi, pipe fish and shrimps (crayfish) in the Marvoe river downstream;
- The deaths of aquatic species were caused by asphyxiation (deprivation of oxygen) due to exposure to higher than permissible limits of free cyanide;
- The exposure to free cyanide is linked to a spill/seepage event from BMMC tailings storage facility at New Liberty Gold Mine; This event occurred on or before 8:00 a.m Saturday, 21 May 2022;
- At the time of sampling, free cyanide remained higher than permissible at TSF-R, EDMP-2 and beyond the IFC recommended threshold of 0.022 ppm at Jekandor;
- Despite suitable availability of habitat, no expected species were observed at EDMP2 and JAKSW1 (Jekandor) and therefore indicative of a modified environment

RECOMMENDATION

- Ensure that BMMC provides protein and carbohydrate-containing food (beans, fish, eggs, meat, mild, peas, nuts, rice) and bottled water for the affected communities for **90 days**, beginning **Tuesday, 31 May 2022**; This is subject to extension based on prevailing water quality at the time of expiry;
- Ensure to conduct a full-scale assessment to determine the magnitude of the pollution and develop a road map for restoration at the expense of BMMC;
- Ensure that BMMC develops a restoration plan, through a third-party EPA-certified consultancy firm and submit said plan to the EPA for approval, within **14 days**, beginning the date of this presentation;

RECOMMENDATION CONT…

- Ensure to impose a fine on BMMC for violating provisions of the law, including permit conditions;
- Ensure to maintain constant contact with PACs to reduce expectation and maintain civility in the landscape; Advise BMMC to expedite the relocation of the PACs
- Ensure to work with other stakeholders to ensure BMMC complies with count one of these recommendations;
- Communicate to BMMC the EPA's position and inform the public through a press conference with the presence of BMMC by **Tuesday, 31 May 2022.**
- Ensure to conduct a full-scale assessment of BMMC TSF operations and its compliance with its design, environmental management plan and permit conditions.

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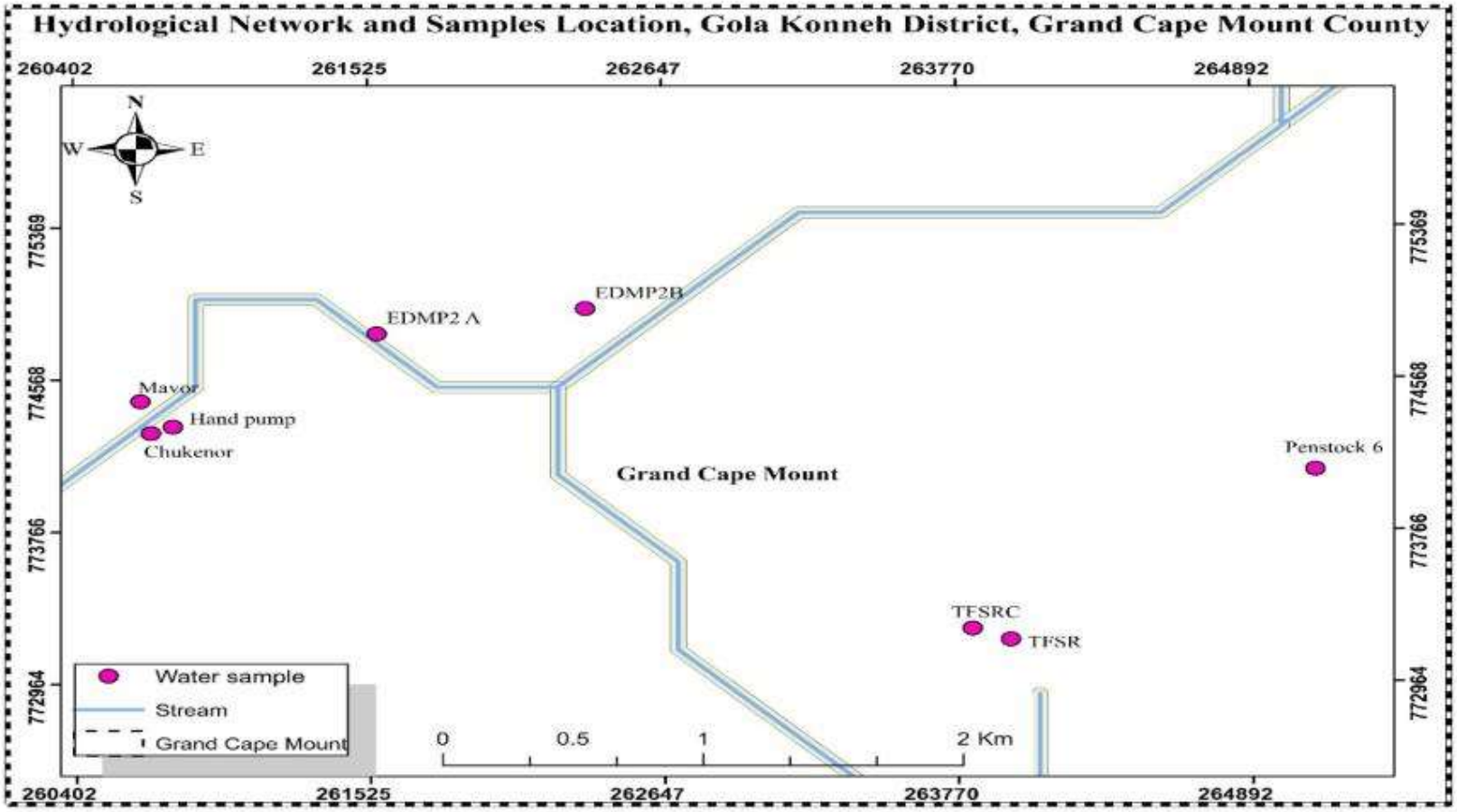
MAP OF STUDY AREA



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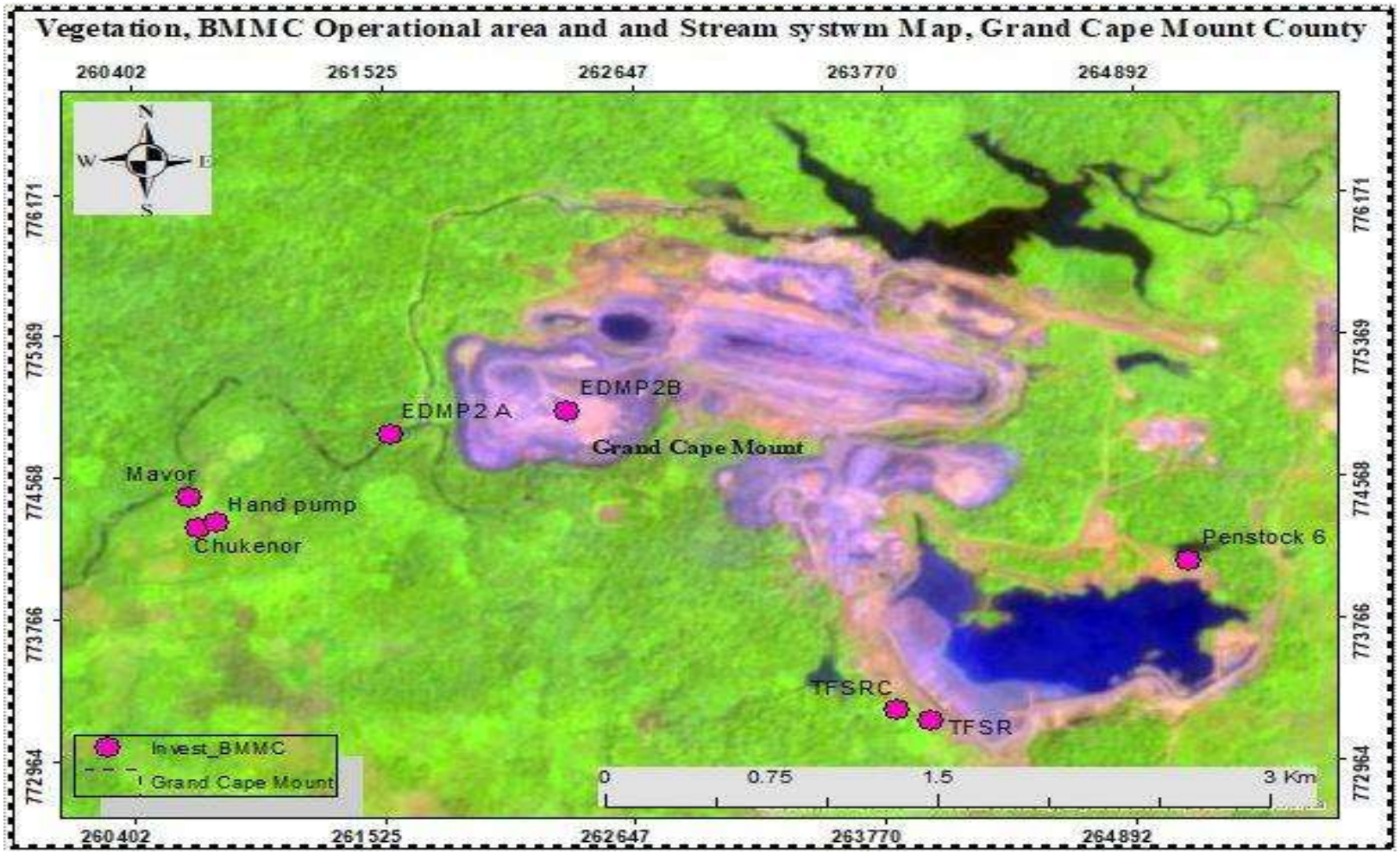
MAP OF STUDY AREA



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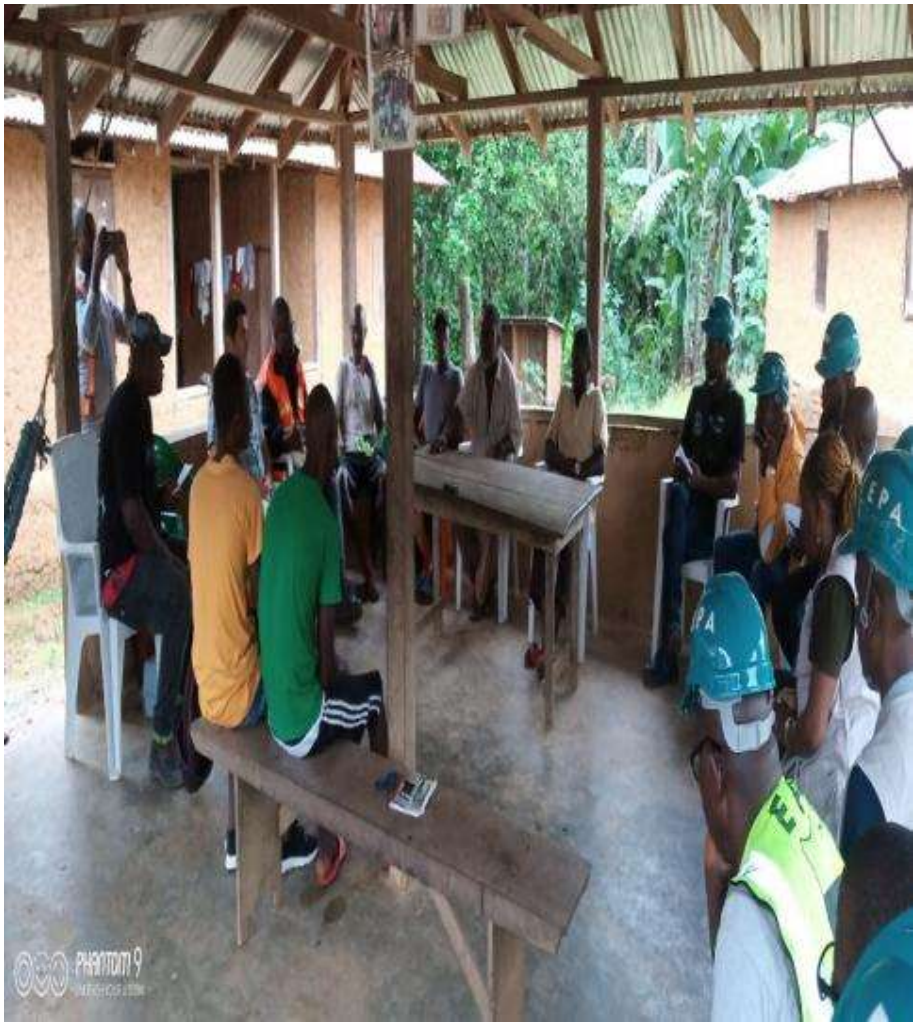
COMMUNITY ENGAGEMENT JAKENDO



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FIELD SAMPLING

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