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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
February 20, 2023

Ensuring Sustainable Environmental Management

Outline

- Introduction
- Methodology
- Key findings *(Social Engagement & Sample Collection & Analysis)*
- Conclusion
- Recommendations

INTRODUCTION

- During the early morning hours of **February 19, 2023** the attention of the EPA was drawn to communication from the Management of Bea Mountain, notifying the EPA of the people of Jekandor's observation of dead aquatic species along the Marvoe Creek in Jekandor, Grand Cape Mount County.

- As a result, the EPA made several calls to residents of Jekandor to ascertain the information as part of its preparation for an immediate intervention into the situation.

- A few hours later, residents from Jekandor, including their lawyer, Cllr. Benedict Sannoh confirmed the incident and requested the EPA's intervention.

- This compelled the EPA to immediately dispatch a team of technicians to the affected communities and BBMC facility in NLGM on **20 February 2023** to conduct a full-scale investigation to ascertain the validity of the allegation, assess water quality and trace the source of the pollution, if established.

EPA-TEAM

No	Name	Position	Role
1	John K. Jallah Jr	Manager, C & E	Technical Team Lead / Environmental Engineer
2	Daoda S. Carlon	Assist. Manager, ESIA	Lead ESIA Expert / Evaluate ESIA Compliance
3	Joseph Charles	OIC/ERRS	Environmental Quality Specialist
4	Berexford Jallah	Head of GIS	Geo-spatial data collection
5	Love Allison	GIS Officer	Support to the GIS Team
6	Lenn Gomah	Laboratory Technician	Environmental Chemist / Water Quality Analyst
7	Tennemah Coleman	Assist. Manager, Outreach & Training	Community Engagement / Environmental Awareness
8	Gabriel Jasper	ESIA Compliance Officer	Assist with Evaluate ESIA Compliance Issue
9	Varney Armah	Remediation Analyst	Assess the potential of remediation
10	Wellington Ben	County Head Inspector	Environmental Scientist
11	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 leadership of project-affected community was contacted via phone, prior to the team's visit; • BMMC was also notified of the team's visit
3	Community Entry/Exit	• A town hall meeting was convened in Jekandor (Representatives of the incident-affected communities and BMMC were in attendance • Closing remarks and recommendation were made and communicated to both parties
4	Discussions/facts finding	Representatives of both parties (BMMC & Jekandor) part of the meeting, 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	Water samples collected environmental quality data were analyzed at the EPA's Laboratory in Monrovia

Key Representatives in the opening conference (Community)

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	Community Spokesman

KEY FINDINGS from Community Engagement

- The team confirmed the death of two tilapia species downstream of the Marvoe Creek;
- Two additional tilapia species were also seen in the village of Jekandor;
- Bea Mountain had supplied water and food items two weeks prior to the discovery of dead fish along the river banks;
- The Community informed the EPA that their lawyer collected a sample of the dead fish and brought it to Monrovia for laboratory analysis to determine the cause of death;
- Fingerlings were observed at the downstream portion of the river where the dead fish was discovered;
- The community vowed to protest if the issue of the pollution is not be adequately address by the Government;
- The people of Jekandor continue to requested to be relocated; they even claimed to have found a land;
- Some residents of Jekandor have left the village for fear of the first incident, thus reducing the initial population (n=250);

KEY FINDINGS from Social Interviews & Observations

- Jekandor Community is concerned about frequency of this pollution and how the first situation was addressed, so they invited journalists (ELBC Cape Mount, and ECOWAS Radio) to the meeting;
- The community appealed to Government to prevail on the BMMC to relocate them or provide basis social amenities (road, safe drinking water, alternative livelihood);
- The team observed that some of the recommendations from the previous incident were not implemented by BMMC.

Recommendations (Comm. Engagement)

1. 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 **45 days**, beginning **Monday, 20 February 2023** (this is subject to extension, based on prevailing water quality at the cut-off date);
2. Ensure that BMMC develops a restoration plan, through a third-party EPA-certified consultancy firm and submit the said plan to the EPA for approval, within **seven days**, beginning the date of this presentation;
3. Ensure to impose a fine on BMMC for violating provisions of the law, including permit conditions;
4. Ensure to communicate these findings to the community and maintain constant contact with PAC to avoid any potential escalation of the situation;
5. Ensure that EPA conducts a comprehensive assessment of the current TSF in Kinjor and recommend alternative plans for mine slurry deposition as we approach the rainy season and as the proponent expands its operations in the landscape;
6. Support the voluntary resettlement of the village of Jekandor as a potential relief to the community, considering their proximity to the current Tailing Storage Faciltiy (TSF) and other facets of the company's operations.

Sample Collection & Analysis

- Water samples were collected from nine (9) locations within the study area; duplicate samples were collected by BMMC (not a third party firm as required) 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 Details

Sample ID	Sample Code	Sample Source/ nature	Sample Location	Coordinates
SP1	Pen 6	Penstock 6/ Freshwater	Mavor Diversion	06.99812N/11.12615W
SP2	MB 7	Groundwater Monitoring Borehole	NL Groundwater Monitoring point 7	06.98811N/11.13328W
SP3	TSF-R	TSF Return Pond Outlet	NL TSF Return	06.98997N/11.13663W
SP4	TSFR-C	TSF Return Effluent	Beyond NL TSF Return	06.99034N/11.13752W
SP5	CMP 2	Compliance monitoring point 2	NL's point of compliance	06.98918N/11.14896W
SP6	GMB 2	Groundwater monitoring borehole	NL's Groundwater Monitoring point 2	06.98895N/11.14818W
SP7	JAKSW1	Mavor Creek	Jakandor	07.00136N/11.16672W
SP8	JAKSW 2	Mavor Creek	Jakandor	07.00072N/11.16915W
SP9	EDMP 2B	Marvoe Creek	EDMP-2B NL Monitoring Point	07.00429N/11.15874W

BMMC's NLGM Map

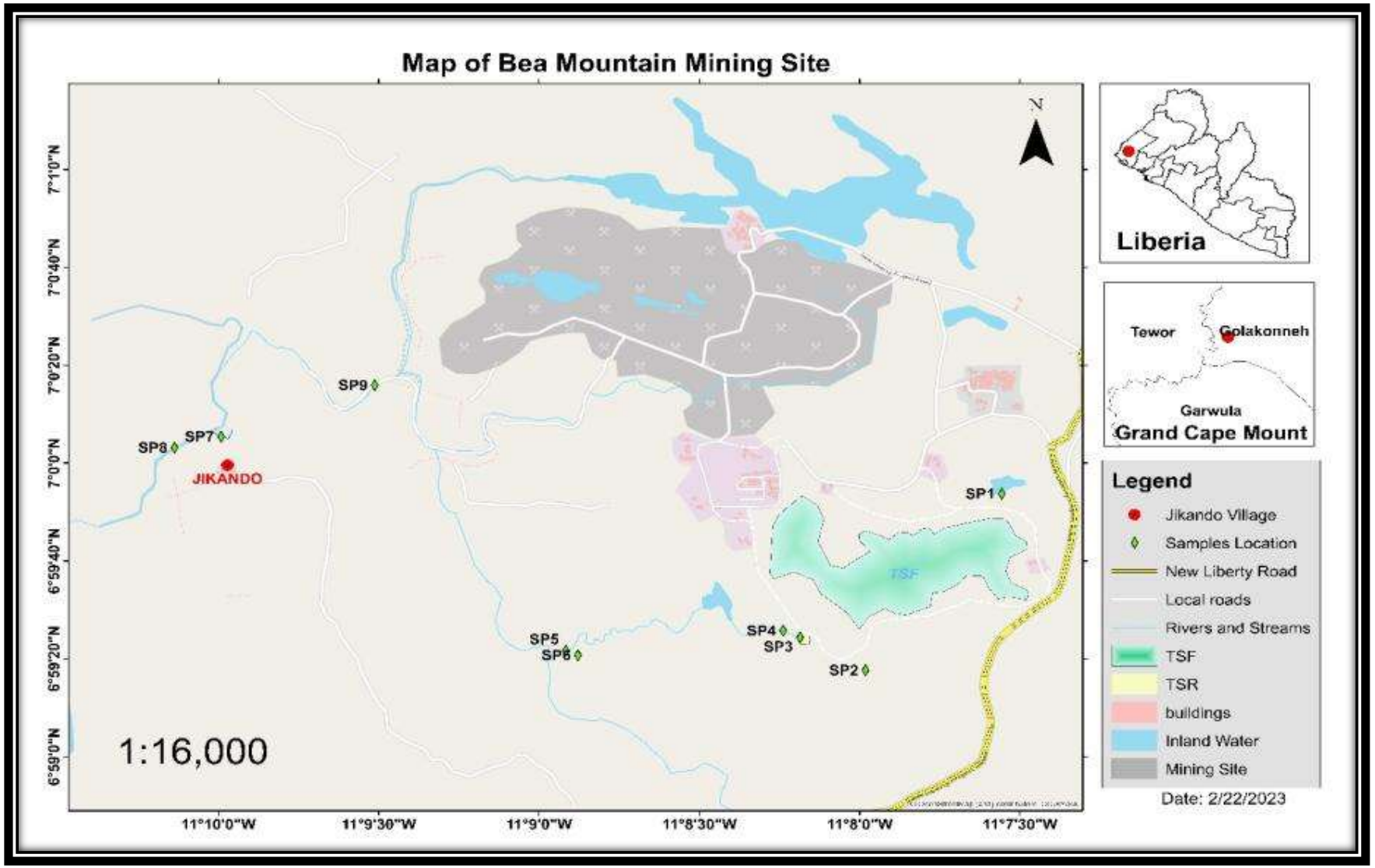

Table 3: Methodology

Parameters	Unit	Method/ Instrument
pH	-log H	Multimeter
Temperature	◦C	Multimeter
Dissolve Oxygen (DO)	mg/L	Multimeter
Electric Conductivity (EC)	µmhos/cm	Multimeter
Free Cyanide (CN)	mg/L	Colorimetric
Copper (Cu)	mg/L	Colorimetric

4.0 KEY FINDINGS: Lab. Results

Table 3: Results of water analysis

Parameter	Unit	SP1	SP2	SP3	SP4	SP5	SP6	SP7	SP8	SP9	Limit @TSF-R	Limit @CMP-2
pH	-log H	9.21	6.85	8.30	8.94	9.62	8.92	8.83	8.92	8.98	5.5-9.0	6.0-9.0
Temp	◦**C**	29.1	30.6	32.0	33.1	32.1	29.3	29.7	29.2	30.7	NS	NS
DO	mg/l	6.47	2.12	6.76	4.24	3.42	6.91	5.72	7.92	7.04	NS	NS
EC	µmhos/cm	64.6	33.2	1984	2110	4008	127.8	1117	1116	1206	NS	NS
CN	Mg/L	0.00	0.002	**0.074**	**0.167**	**0.195**	0.00	**0.171**	**0.292**	**0.266**	0.05	0.022
Cu	Mg/L	ND	0.001	**11.291**	**6.770**	**5.213**	0.001	**3.090**	**2.193**	**2.091**	0.2	0.1
Compliance Status		C	C	**NC**	**NC**	**NC**	C	**NC**	**NC**	**NC**		

Important Note:

1. Figures in **bold** are above the required permissible limits as provided in BMMC (NLGM) effluent discharge permit.
2. Monitoring points highlighted in green (labelled “C”) are compliant with the required discharge limit.
3. Monitoring points highlighted in red (labelled “NC”) are non-compliant with the required discharged limit.

4.2. PHYSICAL OBSERVATIONS DURING THE INVESTIGATION

- The team observed that BMMC discharged/released a huge quantity of copper sulfate into the TSF-R. The copper sulfate solution was seen entering into the receiving environment.

- The Gabion Basket installed at the TSF-R and beyond are partially damaged

- Fingerlings were observed in the water at JAKSW-2, however, the team observed evidence of dead fish near the water at JAKSW-2 (in Jekandor)

DISCUSSION

- The results of the analysis showed that free cyanide and copper levels were higher than acceptable at six of the nine sampling points. Copper and free cyanide levels recorded in the study are directly emanating from BMMC tailing Storage Facility at New Liberty. The release of copper sulfate directly into the TSF-R is a violation of **Section 5.2e** of the **BMMC TSF-III Permit** which requires the company to seek approval from the Agency if there is a need for chemical treatment of tailings within the facility.
- No such approval was given by the Agency, therefore the company was in violation. The unapproved release of copper sulfate into the TSF-R and the nearby receiving water body resulted into water pollution which is a violation of **Part V: Section 61 of the EPML** which strictly prohibits the pollution of water in any form and manner. This is also clearly articulated in **Section 10** of the **BMMC's (NLGM) Effluent Discharge Permit**

CONCLUSION

- The team observed evidence of dead, decomposed fish species tilapia, downstream of Marvoe creek;
- The death of aquatic species may have resulted from elevated free cyanide and dissolved copper levels due to exposure to higher than permissible limits of free cyanide from BMMC's TSF;

RECOMMENDATION: Lab Assessment

- Invite BMMC to “show cause why’ they should not be held liable for the violation stated in the report.

- Prepare and issue BMMC a non-compliance notice for the violation and communicate associated penalties.

- BMMC should regularly repair and upgrade gibbon baskets as provided in Section 6.3 and 6.4 of the **BMMC’s (New Liberty) Effluent Discharge Permit.**

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Engagement with all parties in Jekando

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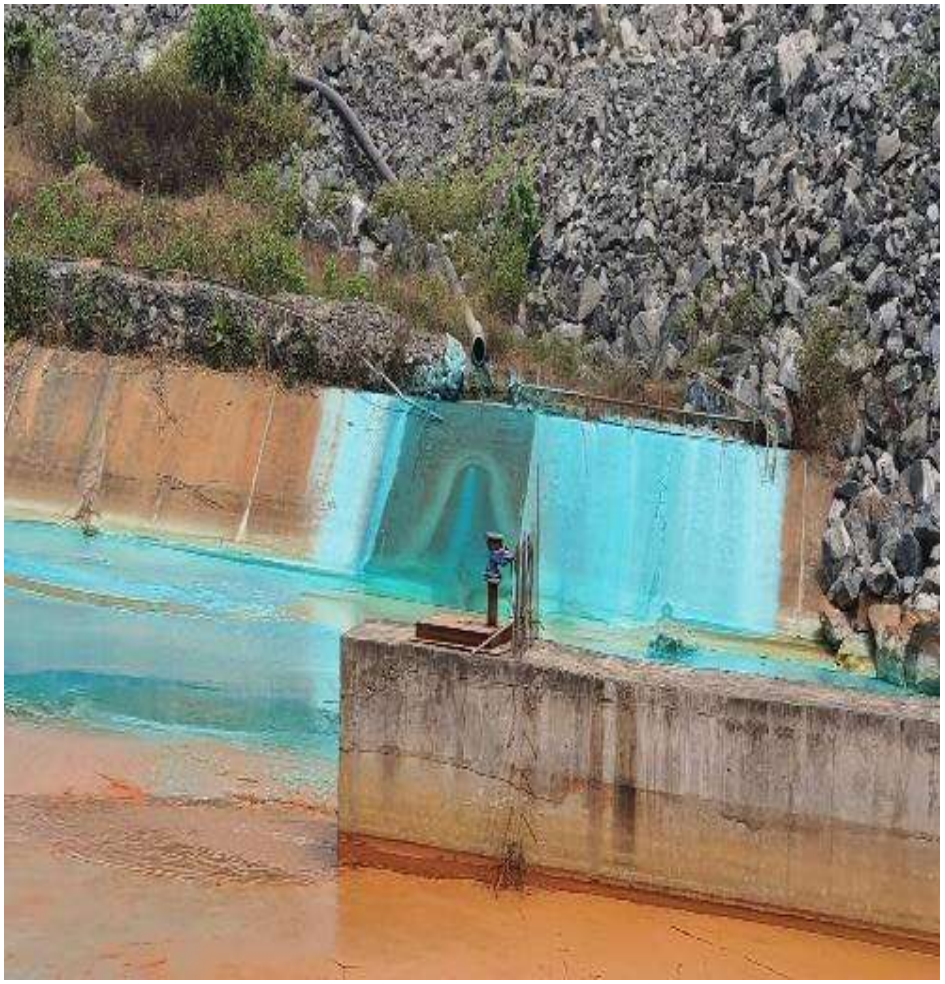
Team Sapling at Marvoe Creek (downstream)



A huge quantity of raw copper sulfate observed at TSF-R

PICTORIAL

A huge quantity of raw copper sulfate observed at TSF-R

Flow of raw copper sulfate observed beyond Gabion basket at TSF-C.

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Damaged Gabion Basket observed at the TSF-R

Flow of raw copper sulfate observed entering the environment

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Dead fish observed at Marvoe creek (downstream)

Dead fish observed in the village of Jekando


THANK
YOU