



**Review of the EIS for the  
“Proposed Quarrying and Mineral Processing at Halberstadt Quarry,  
St. Andrew, Jamaica”  
Jamaica**

**Done by**

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*This document contains the professional opinion of the Jamaica Environment Trust (JET). In arriving at our opinion we made every reasonable attempt to ensure that our resource persons are informed and reliable and experts in the area in which their comment and analysis is sought. JET encourages readers to apply their own critical analysis to the information provided in this document and by others, particularly where JET's opinion differs from those others.*

With technical assistance from the Environmental Law Alliance Worldwide (ELAW), the Jamaica Environment Trust (JET) and Ten Miles Citizen Council evaluated the Proposed Quarrying and Mineral Processing at Halberstadt Quarry, St. Andrew, Jamaica dated October 2013.

## **GENERAL COMMENT**

JET and The Ten Miles Citizen Council attended the public meeting held on November 22, 2013 by the project proponent to discuss the EIS. During the public meeting, the attendees were advised that the deadline for submitting comments to NEPA on the EIS was 14 days. It is our view that the time period for soliciting public comment is insufficient for members of the public to review the EIS and prepare an intelligent response. The EIS is 475 pages and includes technical and scientific information and in that regard is similar in nature to an EIA for which the **NEPA's Guidelines for Conducting Environmental Impact Assessments** requires a 30 day comment period. Further, the proposed quarry can potentially cause severe negative impacts to the environment and surrounding communities and the EIS lacked clarity on a number of issues that would mitigate these impacts. 14 days is insufficient to give careful and due regard to these risks and verify information and statements in the EIS.

## **RUN-OFF, DRAINAGE AND FLOODING CONCERNS**

**The EIS does not contain sufficient information to determine the risk of flooding from run-off or the adequacy of mitigation measures to control this risk.**

The Ten Miles Community's primary concern is determining if fines and aggregates among other materials resulting from the quarrying activities will end up in any tributary or directly enter the main water way 'Bull Park River' which has been the source of flooding due to quarrying activities.

The EIS does not hide the fact that the proposed project would cause enhanced rates of soil loss that would flow downhill and downstream from the project area via Bull Bay River. Please see the following material from Section 7.15 of the EIS (pages 200-207).

“The site is drained toward the boundaries and ultimately south-east via overland sheet flow and shallow concentrated flows to the existing gullies and roads. When the Halberstadt quarry is reopened and in full operation, the runoff will increase due to vegetation being removed. The runoff from quarry surfaces will generally be faster and increased in volume. This can be attributed to the exposed hillslopes with little or no vegetation to reduce the flow. The more vegetation that is removed, the more the increase in storm water runoff and the more impacts it will have. The immediate community south of the proposed site does not experience flooding according to anecdotal information received, however, the communities downstream in proximity to 10 miles Bull Bay might be affected by this increase.

...

“Run-off from the quarry is a problem and as a result has adverse impacts on the communities on the flood plain of the Bull Park River. The quantity and quality (physical, chemical) of both surface waters as well as groundwater may be affected by quarrying activities - may be contaminated by runoff or dust from the quarry. The removal of topsoil, overburden and aggregates may affect the quality of water recharging of an aquifer.”

Second, the EIS proposes to mitigate/prevent stormwater runoff with high levels of eroded soil by use of a sediment detention pond. Please see the following material from Section 9.1.1 of the EIS (pages 224-234)

“The flows generated from the site catchment will, where possible, pass through a detention basin prior to final discharge through the proposed culvert. There is a natural depression within the topography of the site where the space required to construct detention ponds is available. It was envisaged that the proposed pond should be capable of reducing up to the 25yr peak future flows without any significant construction.

“It is further proposed that the boundaries to the east of the quarry boundary be bermed to prevent the untreated surface runoff from simply flowing down the mountain slopes and into the Bull Park River. The stormwater generated from the west of the quarry boundary will be directed to proposed drains along the roads where it will negotiate a series of check dams and routed through the detention basin. On passing through the basin, the storm water will first traverse the proposed sediment traps which will aim to reduce the sediments being transported within the runoff. This ‘filtered’ stormwater will then flow over the weir, spread out in the detention basin and reduce the peak flow out of the basin as some of the volume flowing in will be stored and a negligible amount lost to evaporation.”

**The key facility at the mine for control of stormwater runoff with high levels eroded soil is the sediment detention pond. HOWEVER, the problem with the EIS is WHERE, exactly the project proponent will locate this sediment detention pond.**

There are two figures that provide layouts of facilities at the proposed mine:

Figure 9.5 Proposed layout of drainage including earth swales, culvert crossings and detention pond (on page 233) which clearly indicates the location of the sedimentation pond.

Figure 5.3 Proposed Halberstadt site layout, along with locations of boreholes (on page 26) which shows that there is NO sediment detention pond, but in its place is the overburden storage site.

From our review of these two figures it is apparent that the proposed location of the sediment detention pond is the exact same location as the overburden storage site. A

sediment detention pond and overburden storage site cannot co-exist at the same location. The layout of the proposed project will need to have BOTH of these facilities (and they should be away from one another, lest rainfall wash soil from the overburden storage site right into the sediment detention pond.

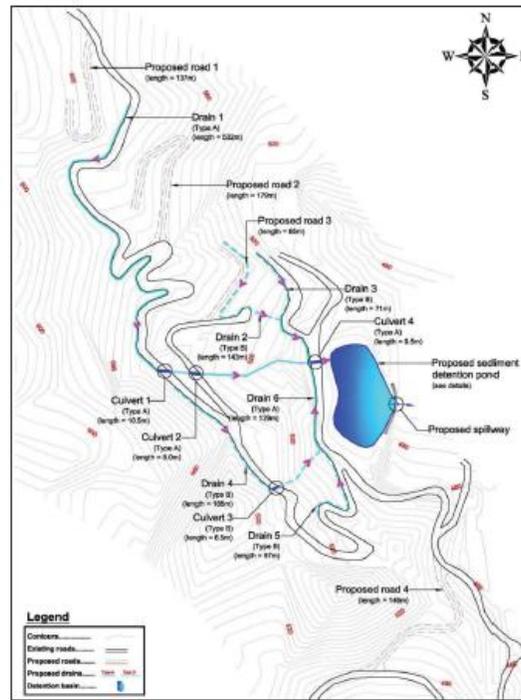


Figure 9.5 Proposed layout of drainage including earth swales, culvert crossings and detention pond

At the public meeting, a representative of the EIS team confirmed that there was an overlap in the location of the overburden storage site and the sediment detention pond and that the overburden storage site would have to be relocated. However, the project proponent and EIA team representatives could not state where the overburden storage site would be located. Having regard to the importance of these facilities to controlling runoff and the risk of flooding, one of the most significant impacts of the project, the location of the sedimentation pond should be clearly identified prior to the grant of an environmental permit from the Natural Resources Conservation Authority.

### Additional concerns relating to the risk of flooding

Dimensions of the sediment trap:

Page 58 of the EIS states-

“Because the quarry activities will unavoidably increase the amount of material that become available for transport in the form of overburden storage, small landslide etc., it is still advisable to construct some form of sedimentation trap, to minimize the sediment load of the Bull Bay when under extreme weather condition all loose material is flushed out of the quarry. Since all runoff from the quarry is captured by the Halberstadt quarry gully, one sediment trap constructed in that gully is needed to manage the sediment load of the entire quarry.”

#### Rainfall data-

The EIS should have indicated how many inches of rainfall per hour can the retention pond withstand before being breached.

The rainfall analysis study was not carried out during the peak rainfall periods and provides incorrect data on rainfall in inches.

The Council believes that the figure of 0.62% is unrealistic as it relates to increased peak flow during normal and extreme weather conditions.

The Council raises concerns about the culvert which is broken which leads to the Jack Vale Community and environs and sits in the MAJOR water of the Bull Park River.

Page 200 7.1.5.1 Soil Loss – The Council makes reference to the steepness of the terrain and subsequent landslides influenced by the quarrying operations entering the Bull Park river; which arguably does not necessitate heavy rainfall but continuous rainfall. In addition the Gypsum Company has a track record of not undertaking appropriate and preventative steps to negate downslope movement of material.

#### Drainage -

Page 224 implementation of check dams temporary or permanent across a drainage ditch plate 9.1 will lead to catastrophe. Further analysis should be done on the gradient and the ill effects of severe weather condition.

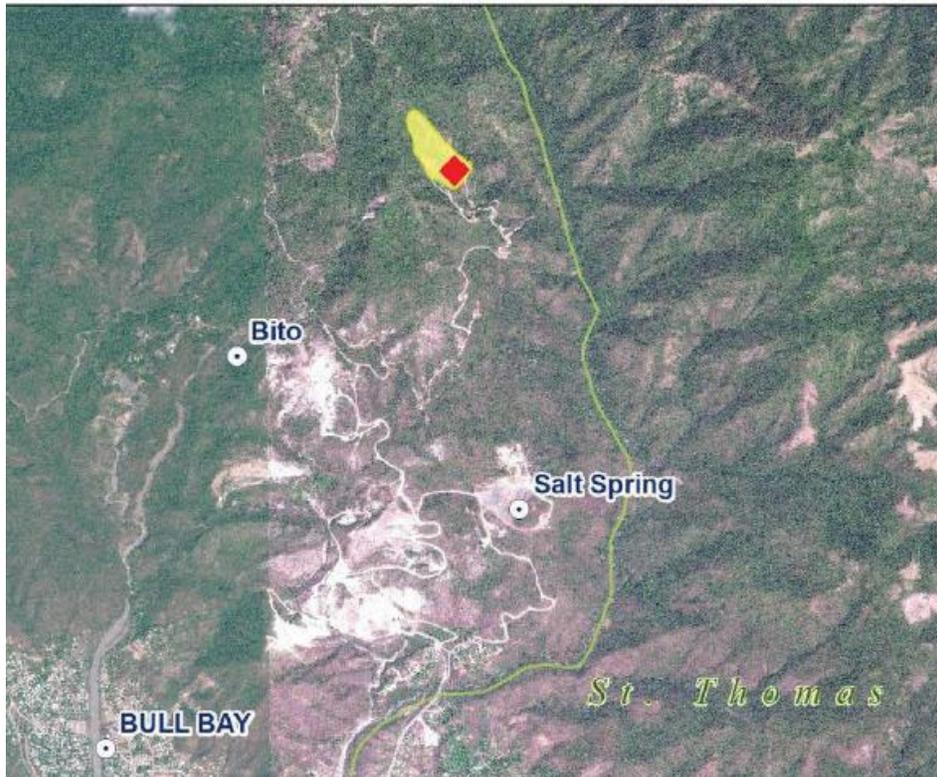
#### Susceptibility to landslides-

The advantages of a landslide susceptibility map was given why wasn't the disadvantages discussed and contrasted.

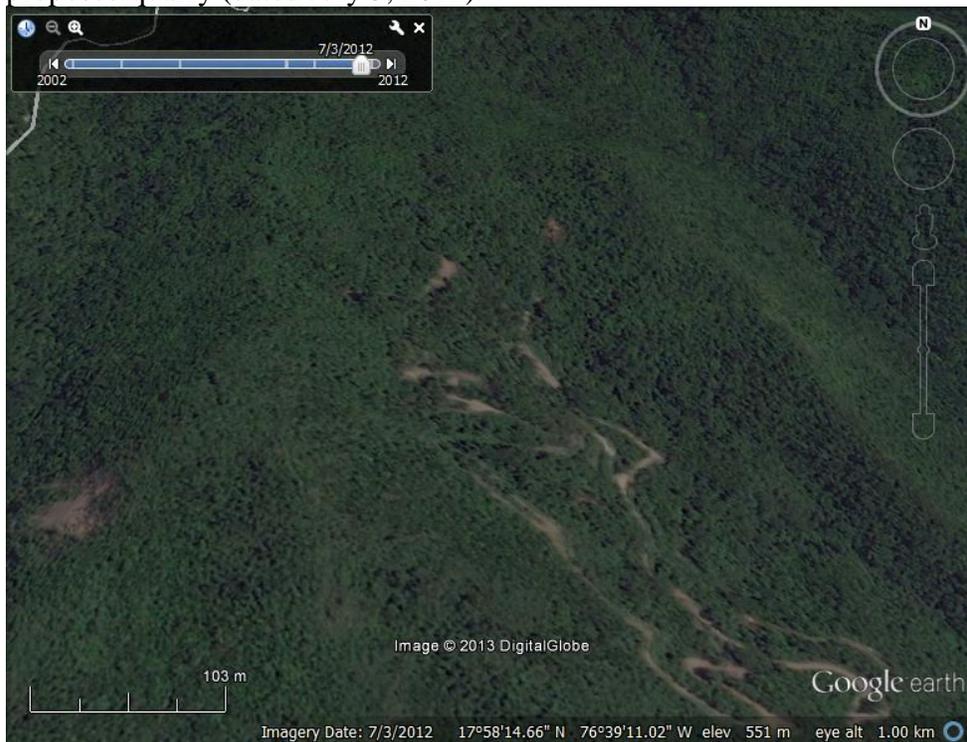
### **ENVIRONMENTAL BASELINE ASSESSMENT**

**The EIS did not include a strong environmental baseline assessment of the project area and species dependent on this area as a habitat, in particular mammals, birds and reptiles.**

A strong environmental baseline assessment accurately characterizes both the habitats and the species dependent upon those habitats. The EIS contains images that suggest that the area where the quarry will be located is already highly disturbed: (see Figure 5.1 from the EIS below, showing the location of the proposed mining site at Halberstadt Quarry). This image is repeated a number of times in the EIS.



However, we would argue that the area is considerably less degraded than Figure 5.1 suggests. Below is a close-up Google Earth satellite image of the location of the proposed quarry (dated July 3, 2012).



This image shows the project location as a dense forest. The quarry will represent a major disturbance within this ecosystem. Given that fact, it is incumbent upon the project proponents to carefully and thoroughly characterize the environmental baseline, so that species and habitat impacts can be properly accounted for and mitigated against. This EIS does an unacceptably poor job of characterizing the environmental baseline.

The relevant Terms of Reference for the project require the following:

“4.0 Description of the Environment

“This task involves the generation of baseline data which is used to describe the study area as follows:

- i. Physical environment
- ii. Biological environment
- iii. Socio-economic and cultural constraints.

“The methodologies employed to obtain baseline and other data should be clearly detailed in the EIS. Baseline data should include: ....

“Biological

“Present a detailed description of the flora and fauna (terrestrial, aquatic and avifauna) of the area, with special emphasis on rare, endemic, protected or endangered species. Migratory species should also be considered. There may be the need to incorporate micro-organisms and the existence of micro-habitats to obtain an accurate baseline assessment. Species dependence, niche specificity, community structure, population dynamics, carrying capacity, species richness and evenness (a measure of diversity) ought to be evaluated.

“6.0 Identification and Assessment/Analysis of Potential Impacts ....

“Biological Impacts – These will address the effects on flora and fauna, such as the loss of habitats, niches and species.”

With respect to terrestrial flora, the project proponent spent two days looking at the proposed site. With respect to terrestrial flora, pages 145 to 146 of the EIS state (emphasis added):

“6.0 Identification and Assessment/Analysis of Potential Impacts

“Biological Impacts – These will address the effects on flora and fauna, such as the loss of habitats, niches and species.

## “6.2.1 Terrestrial Flora

### “6.2.1.1 Introduction

“This section entails the results and recommendations derived from inland vegetation surveys conducted July 13 & 18, 2013 at the proposed site, located in the Port Royal Mountains – a subordinate range of ridges extending southwards from the main Blue Mountain Range (Plate 6.10). ...

With respect to terrestrial fauna, pages 155 to 158 of the EIS state (emphasis added):

## “6.2.2 Fauna

### “6.2.2.1 Literature Review

“Few studies have been carried out in St. Thomas and its environs but have been limited to disturbed areas. In the Morant Bay area, which was slated for a housing development, an avifaunal survey in 2002 found the presence of seventeen (17) species of birds which included one (1) endemic species and three (3) endemic subspecies. Similarly in 2005, CL Environmental surveying along the Yallahs River noted only nine (9) species of birds during their survey. They were found to be common residents within Jamaica and no endemic species were found. The low numbers of bird species in both studies were attributed to the disturbed nature of the area whereby many of the natural forested areas have been stripped of naturally occurring forests along with the absence of important feeding trees.

“Butterflies were also found in low numbers within this region. In the 2002 study for the NHDC, eight (8) species were observed which included the endemic Blue Swallowtail butterfly. This species is reported to be known to breed only in St Thomas (Jamaica Naturalist Vol 4 Dec 1994). However, in a study by ESL (2005), at the Caribbean Cement Company, twelve (12) species of butterflies were noted with no threatened or endangered species observed. These species are usually found in open land and dry coastal areas. The endemic reptiles, *Anolis lineatopus* and *Anolis garmani* have been observed and reported in the NHDC (2002) EIA in the Morant Bay area and are common throughout Jamaica. They however reported low numbers.

### “6.2.2.2 Avifauna Survey

#### “Methodology

“Due to the size of the area, the presence of a road network and the hilly nature of the area, the line transect method was the main survey method utilised in the study. In addition, point surveys were carried out in areas which had a good

vantage point in hilly areas which could not be reached. The survey was carried out in one day in the morning and evening. ....

#### “6.2.2.3 Invertebrate Fauna Survey

##### “Methods

“Larger specimens such as butterflies and spiders were recorded directly. Flight nets, sweep nets, beating tray, and direct search of quadrats were used to sample other groups. Specimens collected were taken back to the laboratory for identification. Material was identified using appropriate literature or the collections at the University of the West Indies. A DAFOR rating was established for all recorded species.”

**From this description—with the exception of birds and insects—the consultants hired to prepare the EIS seem to have made very little attempt to characterize the terrestrial fauna of the area (e.g. mammals and reptiles), relying instead on published studies, some of which are admittedly not of the area in question. Therefore, any predictions about the project’s impacts on mammals and reptiles must be considered invalid because they are based on incomplete or missing information.**

With respect to mammals and reptiles, the following survey methodology should have been followed:

“Determine small mammal species composition by live-trapping on plots or along transects that have been randomly located within habitat types on the project area. Place at least two plots, each a minimum of one acre in size, or two transects that are each at least 200 meters long, in each habitat type with a goal of 300 trap-nights on each site. Trapping for relative density estimates should entail a minimum duration of three days at each location. Occurrence of medium-sized mammals can be determined from sign or observation. Lagomorphs can be sampled by means of driving or walking transects. If driving is the method used, the width illuminated by the vehicle headlights can be used as a belt transect. Spotlighting at night is also useful in detecting other nocturnal mammals.

“Conducted night surveys just after dark, when there is no precipitation, and when the wind velocity is less than 15 mph. .... Survey bats through the use of mist nets, and/or by remote monitoring of bat echolocation calls (e.g., Anabat) to determine species presence and abundance. Identification to species level using Anabat devices must include a local calibration of bat echolocation calls with individuals of known species identity.

Reptiles and Amphibians. Determine occurrence by live • ]trapping, capture, observation, and calls. Drift fences are effective for collecting some species. Reptiles and amphibians can often be located, identified and left unharmed. Only

take individuals necessary for positive identification as voucher specimens. Photographic vouchers can often be used. Many frogs and toads can be identified by their calls,”<sup>1</sup>

For birds, the EIS contains no information about where “line transects” and “point surveys” were conducted, where they were conducted, how many times they were conducted, and who conducted them.

With respect to birds, the following survey methodology should have been followed:

“Conduct bird surveys on the area during the breeding season and again during the winter. Survey during migration seasons if the project area includes potentially important stopover areas, such as riparian zones or shelter trees. A variety of survey methods are available (Emlen strip, belt transect, point counts, area searches, spot mapping, etc.). Photographic vouchers or high-quality audio recordings or songs and calls can often be used to identify species. All surveys must be stratified by habitat type with at least two transects, totaling 1000 meters or a single transect totaling 2000 meters, conducted in each type. A single all-inclusive search of one plot per type, encompassing not less than 10% of the area of the type, may be used in lieu of transects. Selection of transects or plots will often depend on the size of the area, local topography and biotic features. Randomly select plot location or starting points and orientation of transects. Conduct a minimum of four surveys, at one or two-week intervals, to take into account weather and temporal variation. ....

“Determine locations of raptor nests within the area and a one-mile perimeter. Nests may be located opportunistically during aerial surveys for big game, while the location of others will entail ground surveys. Indicate relative density of wintering raptors in the report. Any roosts and feeding areas which are observed should be documented.”<sup>2</sup>

Therefore, any predictions about the project’s impacts on birds must be considered invalid because they are based on incomplete or missing information.

For insects (*e.g.* butterflies), the EIS contains no information about where, when and how often “larger specimens such as butterflies and spiders were recorded directly.” Therefore, any predictions about the project’s impacts on insects (*e.g.* butterflies) must be considered invalid because they are based on incomplete or missing information.

In summary, it is difficult to come to any conclusion other than the fact that the project proponents have prematurely submitted their EIS, as their baseline characterization is

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<sup>1</sup> New Mexico Department of Game and Fish (June 2010 "Wildlife Baseline Study Guidelines" [http://wildlife.state.nm.us/conservation/habitat\\_handbook/documents/WildlifeBaselineStudyGuidelinesand%20Appendix.pdf](http://wildlife.state.nm.us/conservation/habitat_handbook/documents/WildlifeBaselineStudyGuidelinesand%20Appendix.pdf)

<sup>2</sup> Ibid.

insufficient. The habitat will be forever altered by this project; the project proponents can take the months required to responsibly assess the area and species it will affect.

### **PROXIMITY TO COMMUNITIES and BULL PARK RIVER**

The presentation did not provide adequate proximity information as it relates to Windsor Lodge Community and the wider Ten Miles Bull Bay environs which would likely be adversely affected by noise and dust nuisance during the construction and operation of the quarry and at risk of flooding from run-off.

The public presentation and EIS did not provide any defined location using land marks for storage, runoffs, blasting, top soil storage among other things that would enable the community to better understand the location and risks.

The Ten Miles Citizen Council is concerned about inadequate information given in regards to the actual proximity of the proposed mining activities to the Bull Park River; the Bull Park River is the community main water source and recreational area.

### **BLASTING**

Page 199 of the EIS states that “7.1.3 Rock Blasting- Blasting is expected to be concentrated mainly within the deposition boundary of the Halberstadt site. The main concerns are:

Fragments of rocks will be propelled into the air by explosions on site. These rocks will create hazards if they are propelled into nearby residences resulting in harm or death.

Fumes (toxic and non-toxic) are released into the atmosphere as a result of using explosives for blasting. Residences may be affected by dust and fumes within 100 metres.”

The Ten Miles Citizen Council has several concerns regarding blasting, in particular:

1. How will blasting affect ground water as well as other chemicals utilized in especially if it will enter water tributaries.
2. If blasting negatively affected structures will relocation and compensation be carried out by Caribbean Cement Company.
3. Blasting activities on lands which were not susceptible to landslides will have negative effects causing the land to become unstable.

### **RECLAMATION**

The community is concerned about the reclamation of land as plants used in the gypsum mines in the past have not been successful to stabilize the eroding slopes.

During the public meeting Yhon Downie representative from the Caribbean Cement Company gave a statement that all excavated materials including fines in production will be used; this argument must be investigated and documented.

### **MITIGATION MEASURES**

No clear definition was given of mitigation exercises and time tabling during the mining operations. For example, the EIS only indicated mitigation measures for the proposed site and not for the adverse effects of silt entering the Bull Park River.

The community has expressed concerns about wetting of roads and requests that roads that are damaged be repaired by use of shingle, asphalt, concrete etc.

The community is concerned that mining operations may occur during the night and requests that there be an express condition of the permit (if granted) that no quarrying operations will be undertaken at night including the transport of materials and that such condition be routinely monitored by the National Environment and Planning Agency (NEPA).

The community raises concerns about Carib Cement Company claims to undertake cutting, backfilling of steep hillsides and benching as the former Gypsum quarry location does not indicate any of the best practices.

### **SOCIAL IMPACTS and CUMMULATIVE IMPACTS ON COMMUNITIES**

Several communities in the Bull Bay region have been adversely impacted by quarrying activities over the years, many without adequate compensation and there is a concern that this cumulative adverse impact has not been addressed in the EIS or by Caribbean Cement Company.

The Council is concerned about the social reconstruction of the devastated Windsor Lodge scheme and Ten Miles environs as a result of the former CCCL gypsum operations. Caribbean Cement Company and the EIS did not adequately address or highlight the negative cumulative impacts to the Windsor Lodge Scheme and Ten Miles Environs with a view of rehabilitating the areas and compensating the residents in the event of catastrophes as evidenced in the past.

The Jack Vale Community relocated as a result of quarrying activities in the Bito area are upset about not having proper access roads or Jamaica Public Service and having to endure the worst of the dust nuisance.

*Prepared by: Jamaica Environment Trust  
Ten Miles Citizen Council  
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