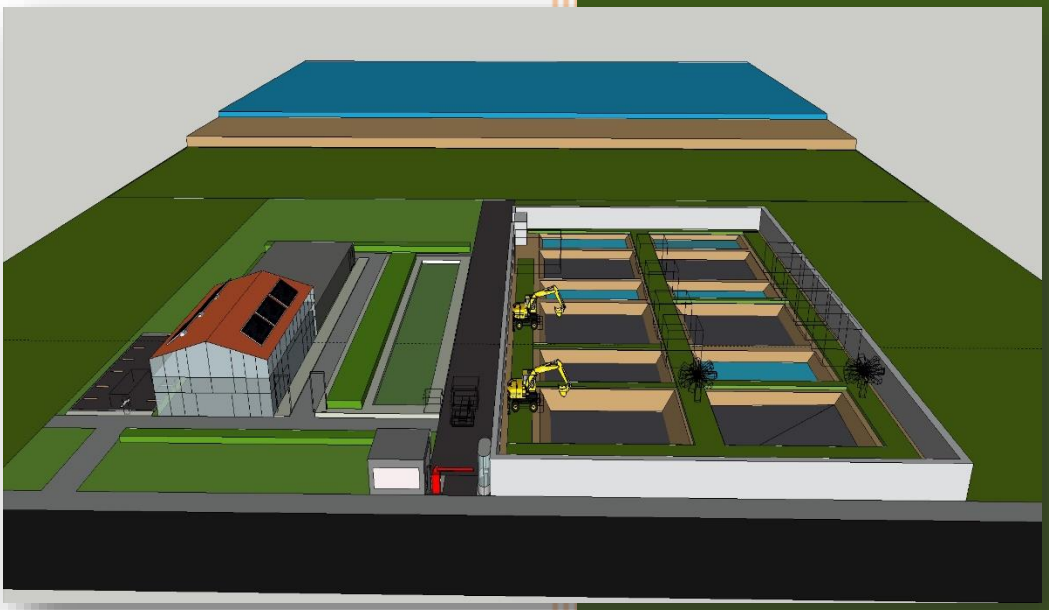
EWMS
GUYANA INC.

[EWMS Project Overview]



PEMMS Private and Confidential

Environmental Waste Management Services

Contents

Confidentiality notice

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Executive summary

Environmental Waste Management Services (EWMS) Inc offers Tank Cleaning & Waste Management services for the oil and gas sector and is committed to the provision of environmentally friendly services with a focus on safety and efficiency for the industrial workplace. EWMS and its Trinidadian predecessor, CAMQUIP Limited, which has been successfully carrying out the same business in Trinidad and Tobago, follow the format of the ISO OHSAS: 18001 System and Code Federal Regulations (CFR. The guidelines set out are strictly followed by CAMQUIP ICS Limited and will be followed by EWMS.

Detailed Process summary

The proposed project will offer drilling waste stream management services to the Oil and Gas Upstream operators, mainly whilst ensuring sound environmental management, safety and efficiency of its operations.

The project involves receiving and transporting solid, liquid, and a combination thereof of drilling Wastes to bioremediation treatment reservoirs to its proposed waste treatment facility located at is 21 and 22 Block xxvii Friendship East Bank Demerara.

Waste Receipt and Transport

Environmental Waste Management Services (EWMS) is notified of wastes arriving at the generator's facility (Shore base) at least 24 hours in advance. Waste received would include residues from cleaning of mud pits, shakers, and sand traps on the rig and transferring into liquid bulk tanks, tote tanks and cuttings boxes and transiting these to the shore base bioremediation waste treatment facility. Residues will include but not limited to wash water, flush water, residues of Synthetic Oil-based Muds (SOBM), Water-based Muds (WBM), Base oil, Brine, Dry bulk (cement, barite, and silica gel).Notification takes the form of a telephone call or via electronic mail. All requests are recorded into the EWMS request log, transportation unit is notified of waste shipment, and transportation date and time is verified bearing in mind the operating hours of EWMS at Lot 21 and 22 Block XXVIII Zone EBD, Plantation Friendship, East Bank Demerara. Transportation is done via Vacuum Tankers (50-150 bbls capacity) for liquid wastes, and dry bulk via Flat Bed, Dump Truck, and HIAB. MSDSinformation is shared and contractor is reminded of PPE requirements. EWMS personnel are notifiedgiving details of the type of waste and possible time of disposal. EWMS requests and receives relevantMSDS and other safety information regarding the waste.

Transport vehicle will be equipped with spill response equipment. The Generators Cargo Manifestis completed in quadruplet giving details of the following:

1. Description of waste
2. Volume of Waste
3. Carrier's Name and Registration Number of Vehicle
4. Location of Origin

5. Destination
6. Date Authorization
7. Any significant conditions/ information

After all fields are completed in the Cargo Manifest, the waste generator keeps a copy and the othertwo (2) copies are taken with the waste transporter to the Disposal Site. EWMS receiving clerk willcheck documents to ensure compliance. One copy of the Cargo Manifest is kept by the disposal site.

An EWMS Activity Sheet is then completed in triplicate giving details of:

1. Client's Name
2. Description of Waste
3. Volume of Waste
4. Carrier's Name and Registration Number of Vehicle
5. Location of Origin
6. Destination
7. Date and Time
8. Authorization
9. Waste Transporter
10. Any significant conditions/ information

EWMS keeps one copy and the waste transporter keeps the others. The Transporter completes aDelivery Note detailing the following information:

1. Date
2. Waste Generator
3. Address
4. Truck Number
5. Trailer Number
6. Waste Quantity
7. Type of Waste
8. Driver's Name

9. Loader's Name
10. Corresponding EWMS Activity Sheet Number
11. Corresponding Waste Generator Manifest Number

The EWMS Representative conducts an inspection of the transport vehicle. If vehicle is in unsafecondition, waste is not received. An inspection of hoses for vacuum trucks is also conducted. Allaspects of this inspection are documented in the Truck and Hiab Inspection Form. A Job SafetyAnalysis (JSA) is completed and signed off. JSA is discussed along with other specific informationand hazards.

If waste is solid, a sample is taken from the truck bed using a grabber before truck proceeds to site.

This sample placed in a zip lock bag and stored in ice to maintain the integrity of the sample. An EWMS representative will accompany tanker / truck to the treatment area so that the waste will beemptied directly in its designated location. Waste disposal locations are shown in figure 1 below.

Table 1: Waste types and location of treatment

Waste Type	Location on CQG site
Barite	Pond lined with HDPE Geomembrane Liner
Brine	Treatment pond lined with HDPE Geomembrane Liner
Contaminated Waste Water	Treatment pond lined with HDPE Geomembrane Liner
Drill Cutting	Pond lined with HDPE Geomembrane Liner
Grit	Pond lined with HDPE Geomembrane Liner
Oily Sand & Water	Treatment pond lined with HDPE Geomembrane Liner
Synthetic Oil Based Mud	Treatment pond lined with HDPE Geomembrane Liner
Separator Sand	Pond lined with HDPE Geomembrane Liner
Water Based Mud	Treatment pond lined with HDPE Geomembrane Liner
Other Various Chemical	Treatment pond lined with HDPE Geomembrane Liner

Table 1: Waste types and location of treatment

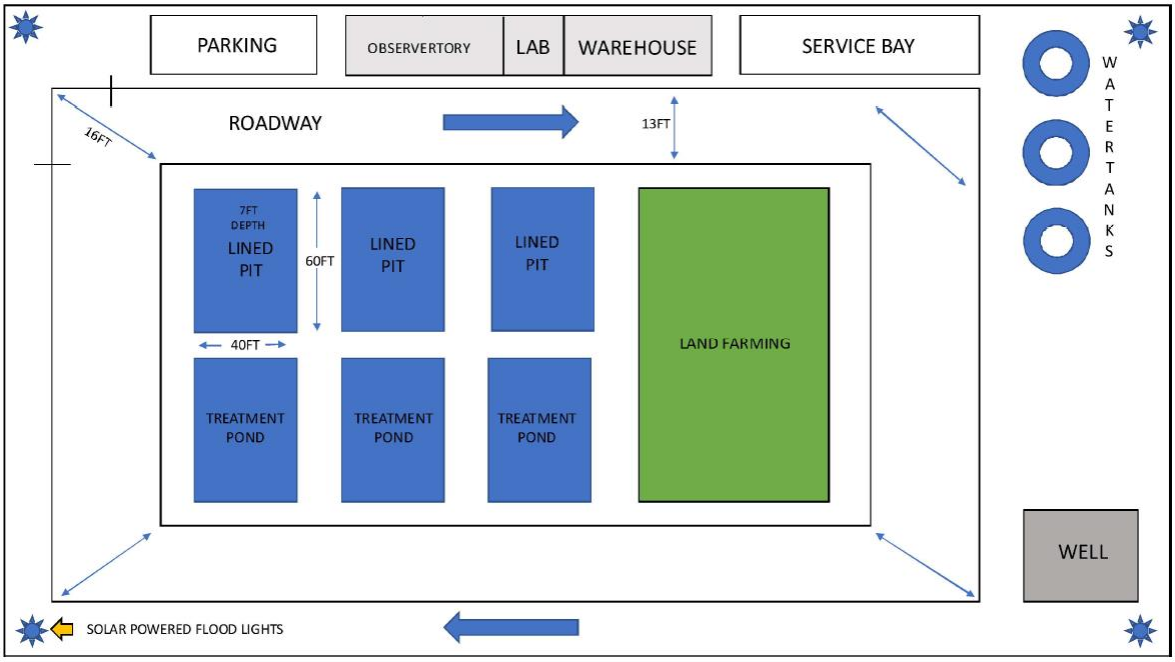


Figure 1: Proposed Layout of the facility and treatment pond

Transport vehicle approaches designated pond in reverse; directed by accompanying lorryman. Transport vehicle stops 3-5 feet from pond edge.

For solid waste, truck hydraulically raises the truck bed to tilt waste into pond. Once completed, treated water from a holding pond is used to wash out truck bed followed by clean water.

For Liquid waste, a sample of the trucks contents will be collected by EWMS personnel and placed in aglass jar and stored in a cooler with ice. EWMS representatives will then forward collected samples toan independent laboratory for analysis. The transport vehicle's lorryman/driver attaches hose topump of vacuum truck. The hose is fed through the anchor located at pond edge and mouth islowered into pond for transfer. Transfer pump is started. Once completed, the operator uses treatedwater in holding pump to wash hose and interior of truck. The rinsate is released into treatmentponds. EWMS is responsible for washing cutting boxes etc. for return to waste generator.

Upon successful receipt of waste, the transport vehicle leaves the site with all necessary documentsand containers which will be returned to waste generator.

The Facility

The waste treatment facility will comprise Office, access roads and treatment/sedimentation pondsof varying sizes. The EWMS Remediation site facility personnel give directive to loaders with regardsto the respective pond in which the waste should be placed. These are based upon the followingfactors:

a. Treatment pond assigned to a Waste Generator
b. Waste type
c. The amount of waste to be received and the amount of waste in the pond
d. All staff must wear appropriate, personnel protective equipment

Construction Phase

Land Clearing

Minimal land clearing is required on site as the land is not heavily vegetated. The area in which the ponds will be situated is currently bare and is used informally by residents of the community as a football pitch.

Design and purpose of ponds

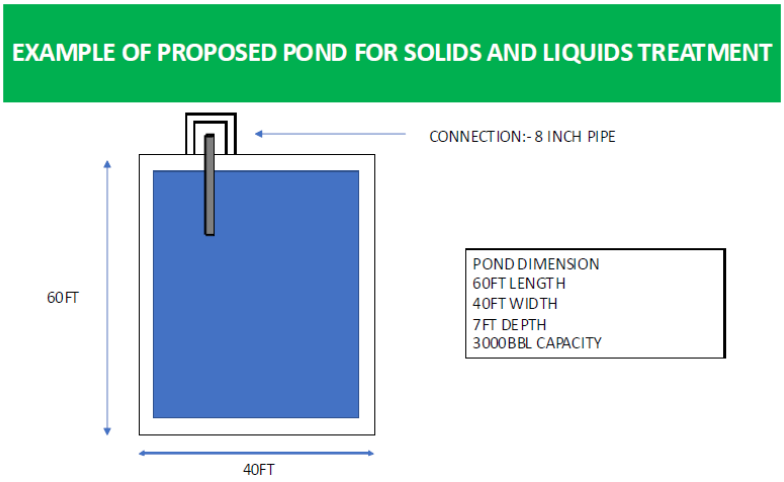


Figure2: Plan Design of a typical Pond

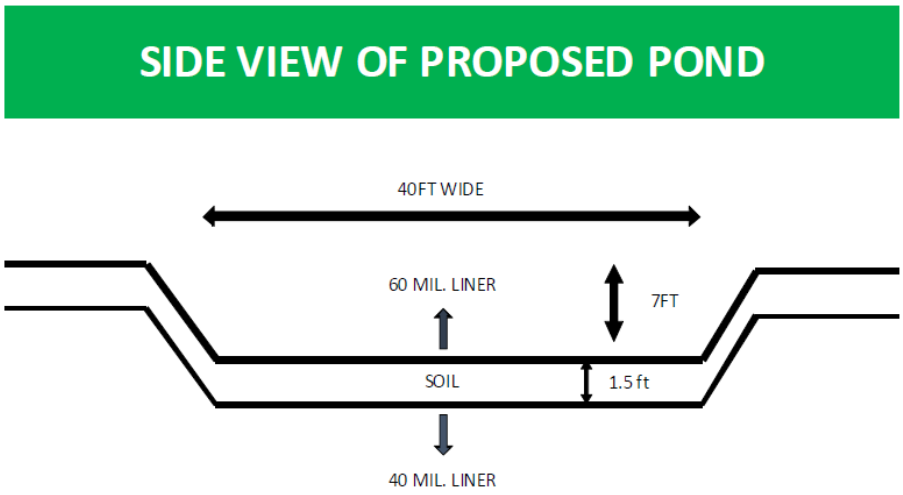


Figure3: Side view of proposed pond showing Geoliner

Operation Phase

Bioremediation with Oil Gator®

Bioremediation is a treatment process that uses naturally occurring microorganisms (yeast, fungi,or bacteria) to break down, or degrade, hazardous substances into less toxic or nontoxic substances. The microorganisms break down the organic contaminants into harmless productsmainlycarbon dioxide and water. The primary product is based upon a biodegradable by-productof the cotton seed delinting process. The product contains 95% cellulose and 5% proprietarycompounds – compounds which act as both nutrients and electron acceptors for the indigenousmicroorganisms. When treated, the cellulose lint also becomes an effective sorbent thatpreferentially absorbs hydrocarbons in the presence of water, and which supports the growth ofnaturally occurring, hydrocarbon reducing bacterial forms. These groups of microorganismsrapidly degrade the sorbed hydrocarbons into simpler organic compounds, and eventually intocarbon dioxide and water.

Oil Gator® contains the naturally occurring microorganisms and nutrients to degrade the absorbedhydrocarbons into simpler organic compounds, and eventually to carbon dioxide and water. Tobioremediate, Oil Gator® requires no surfactants- thus problems with the leaching of toxicsurfactants are eliminated. Oil Gator also does not require nitrogen or nutrient addition. Thesenutrients are encapsulated in the fibres of the Oil Gator®. Oil Gator® contains a wide variety of aerobic and anaerobic micro-organisms which allows the remediation of a wide range ofhydrocarbons, including compounds typically difficult to degrade, such as PAH's and PCB's. The sorption properties of Oil Gator® are based on its ability to draw the target liquid into the inside of its tube-shaped cellulose fibers. It is the capillary action of these fibers, which sorbs andencapsulates the liquid, and prevents leaching. The fibers appear to have a higher affinity forhydrocarbons (oils) than for aqueous solutions, possibly because the fibers originate from an oilbearingplant. The sorption properties of the Oil Gator® fibers are thus dependent on the physicalproperties of the liquid being sorbed – particularly its viscosity.

The Oil Gator bioremediation process is beneficial because:

a. Eliminates leachate thereby protecting groundwaters and surface waters nearby.
b. Avoids nutrient overdosing /eutrophication.
c. Targets a variety of different hydrocarbon contaminants simultaneously.
d. Can be used safely in urban settings.

e. Cost effective in terms of time, labour and financial outlay.
f. Eliminates the need to landfill many forms of hydrocarbon contamination

Dry Bulk waste

Oil Gator is added based on the Total Petroleum Hydrocarbon (TPH) level. 30-45 days after treating, samples are taken by laboratory personnel for analytical testing. If results are higher thanthe acceptable parameter limits as included in the above table, the waste is then further treated with Oil Gator based on the level of contamination until analytical results show that TPH levels arewithin the industry acceptable limits.

When the treatment cell is at an 80% containment capacity, it is closed off, thus indicating that nomore material can be added to the cell. Forty-Five (45) days after closure, the waste in the cell istested with standards set. After bioremediation is complete and industry acceptable results areattained for waste streams, they are then disposed.

An excavator is used to level the mound in the treatment pit. Material is spread in an even layer andcompacted using the excavator. Further additions can be made atop this layer. Once the waste isremediated to below standard limits, it can also be used on site for other purposes such asbackfilling or reinforcing an area.

Liquid waste

After samples have been collected for analytical testing, the waste contents are emptied into the treatment pond lined with polyethylene and clay. An initial treatment with Oil Gator is started immediately. Within the first 7-10 days analytical results are received from the laboratory (ACTLABS) and based on the level of contamination an adequate amount of Oil Gator is added to theWaste. The Oil Gator will be added according to the TPH results. 30-45 days after several treatments to the waste samples are taken by laboratory personnel for analytical testing. If resultsare higher than the acceptable parameter limits as included in the above table, the waste stream isthen further treated with Oil Gator based on the level of contamination until analytical results showthat TPH levels are within the acceptable limits. When the treatment pond is at an 80%containment capacity, it is closed off, thus indicating that no more material can be added to thepond. Thirty (30) days after closure, the liquid in the pond is tested to ensure compliance withstandards set by the Waste Generating Organization/industry acceptable limits.

After bioremediation is complete and acceptable results are attained, the treated liquid is pumpedinto a secondary holding pond. CQG's process is a closed loop process. This means that waste is notdischarged into the environment. A sample of the bottom slush is taken to be analyzed by thelaboratory (once within parameters set). The slush is scraped, removed and buried at theRemediation Site.

Site Investigation

Regional Geology

Little/Great Diamond is located in Guyana Coastal Plain. Sediments of the Coastal Plain together with those of the White Sand Series, referred to as the Coastal Sediments, gave rise to artesian conditions on which the coastal water supply depends. The true sedimentary nature of these beds was first recognized by Bracewel1 in 1927, and a subsequent study of some 58,000 ft. of water well cores by Granthman and Noel-Paton in 1936 together with detailed analysis of cores from the Rose Hall test well by Trinidad Leaseholds Ltd. in 1942 have resulted in identification of four formations in the Coastal Plain. These have been identified to be the Demerara Clay, Coropina Formation, White Sand Series and Berbice Formation. The Demerara Clay, Coropina Formation, and the White Sand Series are considered to be of Plio-Pleistocene to recent age, the lowest members of the White Sand Series being tentatively placed in the Pliocene. There is a scarcity of fossils, except for Recent and Pleistocene molluscs in the upper portion of the Demerara Clay. Petrological examination of cores from the Rose Hall test well showed the entire sequence of beds penetrated consisted of unconsolidated sands and clays which showed few signs of diagenesis or lithification. The sediments were considered to represent one cycle of deposition, the time limit for which was short and probably did not extend further back than the Pliocene.

At the close of the White Sands period tilting on a continental scale is postulated, which elevated the White Sands sheet to its present position inland (maximum elevation 450 ft.) and allowed a marine transgression to take place. Erosion of the shallow sea floor in front of the White Sands produced sand bars, spits and barrier islands which caused the formation of lagoons and tidal flats on their landward side. A large supply of sediment from the major rivers caused rapid silting on the landward side and the development of a series of bars and spits seawards.

In probably late Pleistocene times the sea receded and the soft tidal flat deposits and sand bars were subjected to strong erosion and weathering. The clays became oxidized and firmer in consistency with loss of water and the sandy areas podsolised; these are mapped as the

Coropina Formation. In the Demerara Clay zone many traces are seen of old river channels and levees. Along the coast there is a belt of stranded beach ridges extending from the Corentyne River to the North West Coast. In the field the Coropina Formation outcrops in a narrow belt between the Demerara Clay and the White Sand Series. It is distinguished from the soft grey blue clays of the Demerara Clay by its highly mottled colors and silt content; its weathered nature invariably gives it an acid reaction while the Demerara Clays are more frequently neutral to alkaline.

Towards its contact with the White Sands a number of transition zones occur with increasing sand content. Owing to the low, gently undulating topography and poor drainage properties of these sediments, planosolic soils frequently develop and these areas usually form open savannahs supporting only poor grasses and sedges. Further to the north and east the higher parts of the Coropina topography stand out as forested islands surrounded by herbaceous and Ite palm swamps on the often pegassy surface of the Demerara Clay.

The White Sand Series has a sharp, irregular contact with the more recent formation, behind which it gives rise to the First Savannah zone. Here almost pure white sands support sparse vegetation of stunted bush, poor grasses and sedges. There is some evidence that further to the south towards the rim of the basin these coarse White Sands give way to brown and yellow sands and sandy clays which may be the lateral equivalent of a somewhat different facies of the Intermediate Clays and Lower Sands encountered in coastal wells.

Surficial Geology

The site is located within Guyana Coastal Plain. Clays of the Demerara Clay and Coropina Formation underlie the Coastal Plain, which lies near sea level. This area is crossed by old shorelines and ridges mostly parallel with the present shoreline. The Coastal Plains occupy a strip approximately 38 kilometers wide along the entire Guyana coast (Bleackley, 1956). In probably late Pleistocene times, the sea receded and the soft tidal flats and sandbars were subjected to strong erosion and weathering. The clays became oxidized and firmer in consistency by loss of water and the sandy area podsolised resulting in what is now mapped as the Coropina.

Groundwater

A borehole was drilled to a depth of 75 feet and no significant ground water was encountered. Significant aquifers are not encountered in this area until well over 100 metres in depth.

No.	Well station	Total Well Depth (m)
1	Mocha	143.4
2	Diamond	
3	Kuru Kururu	111.3
4	Yarrowkabra	
5	Soesdyke	261.6
6	Timehri #5	
7	C.A.D	
8	Caledonia	
9	New Hope	
10	Grove	
11	Covent Garden	
12	Eccles	
13	Providence	

Depths (m) of nearest municipal wells

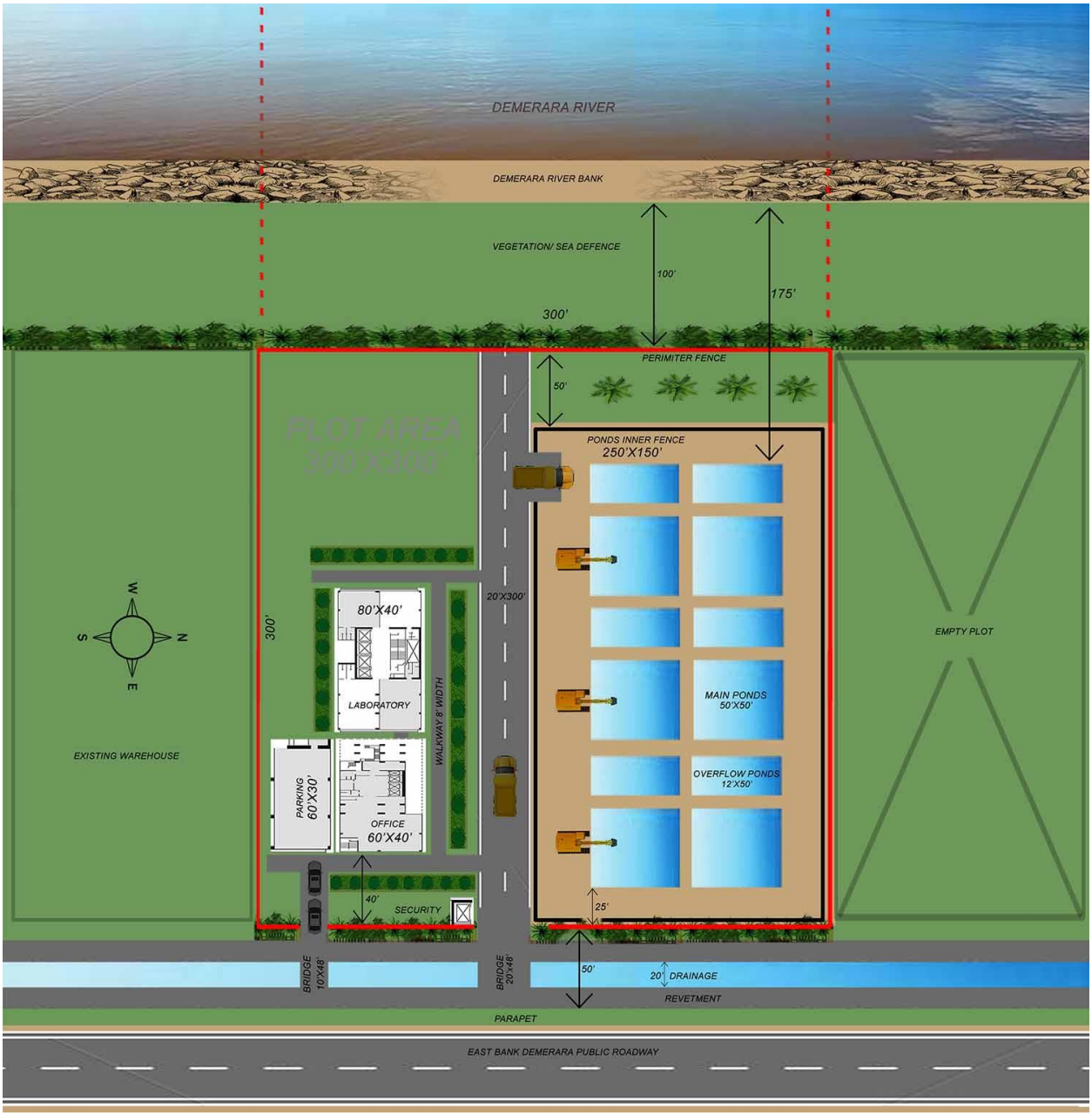
Subsurface and Surface water

Based on samples taken, there is little interaction between the river water and the minimal amounts of subsurface water encountered. As is common in this geographical area, water encountered at a depth of 75 ft or less is as a result of the surrounding soil layers being waterlogged from rain run-off. All readings can be found in the appendices.

Disaster Mitigation Plan/Process Control

As part of its operations, EWMS will institute and strictly maintain a disaster prevention/mitigation plan. This will be instituted at the proposed site and includes but is not limited to the following measures:

1. Installation of a laboratory with qualified personnel to monitor all stages of the bioremediation process. pH levels of all slurries, liquids and sludges in the ponds.
2. Installation of Geotextile Liners under ponds (as shown in design drawings).
3. Quarterly monitoring of the soil surrounding the settlement ponds for any hydrocarbon content. Samples will be taken and sent for ICP-MS analysis and results will be compared to baseline levels established in pre-operation testing.
4. Stabilization of ponds by way of installing sheet piles at the boundaries of the proposed site. This will provide protection against any shifting of the soil surrounding the ponds
5. EWMS Plans to carry out periodic Environmental Impact Evaluations and a specimen of same is attached in the Appendices.
6. Other activities conducive to process control and overall quality and safety management.


DEMERARA RIVER
DEMERARA RIVER BANK
VEGETATION/ SEA DEFENCE
100'
175'
300'
PERIMITER FENCE
50'
PLOT AREA
300'X300'
PONDS INNER FENCE
250'X150'
20'X300'
80'X40'
LABORATORY
WALKWAY 8' WIDTH
300'
PARKING
60'X30'
OFFICE
60'X40'
MAIN PONDS
50'X50'
OVERFLOW PONDS
12'X50'
EMPTY PLOT
EXISTING WAREHOUSE
40'
SECURITY
25'
BRIDGE
10'X48'
BRIDGE
20'X48'
50'
20' DRAINAGE
REVETMENT
PARAPET
EAST BANK DEMERARA PUBLIC ROADWAY
W
S
N
E

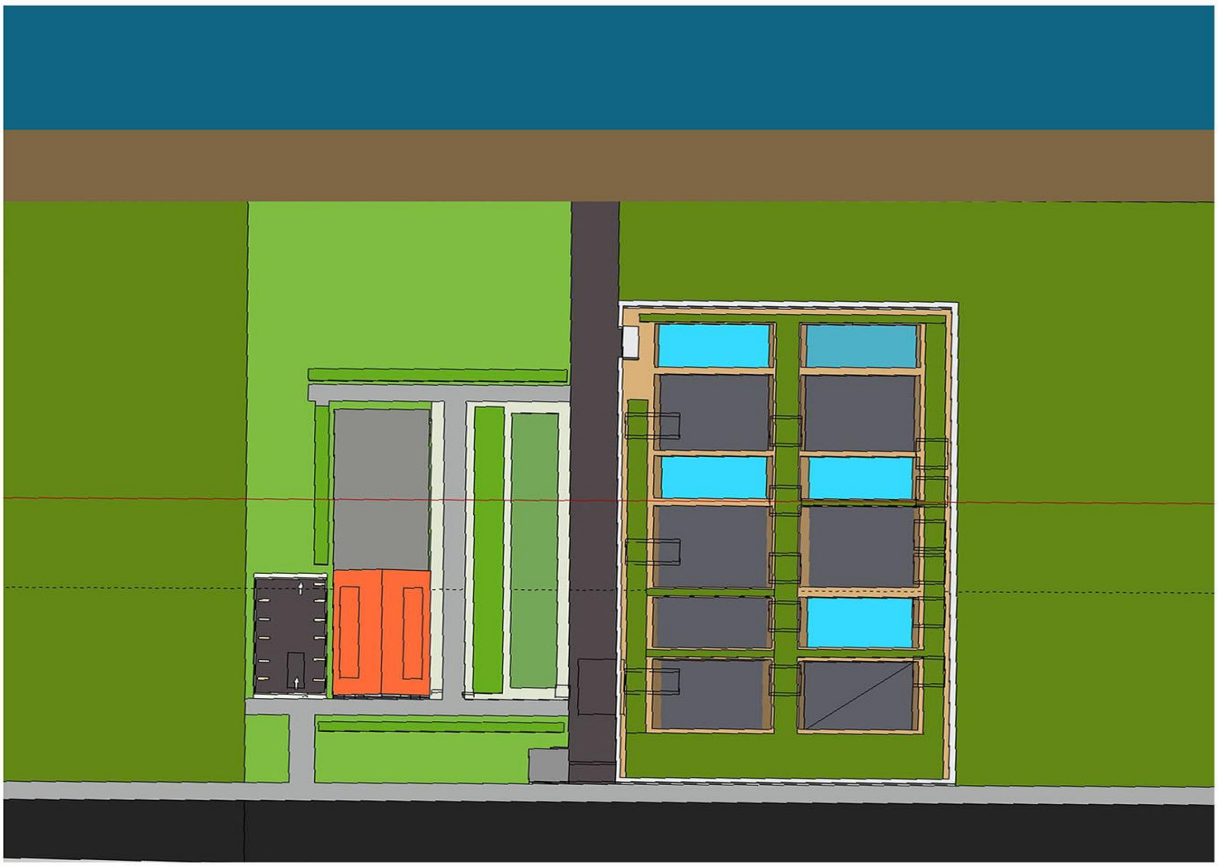
Conclusion/Findings

The proposed site of the ponds is located approximately 80 metres away from the Demerara River. All tests carried out show that there is a thick, highly impermeable layer of soil that is at least 75 ft below the proposed site. In addition, to the protection offered in the designs of the ponds (compact soil layer and geotextile liners below the pond), this impermeable layer offers containment properties in the event of unlikely seepages or spills. No significant groundwater was encountered and the vastly differing values between subsurface waters and the river water shows that there is little interaction between the two areas, river and subsurface at the site. Hence, it can be concluded that in the event of an unlikely seepage, there is little chance of the hydrocarbons getting into the river.

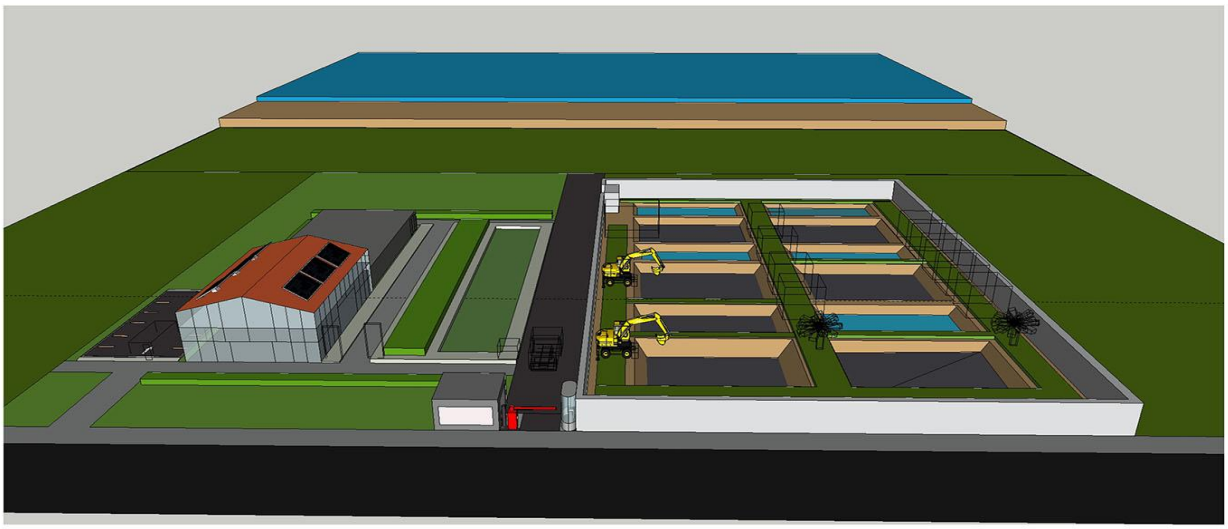
Further, based on the depths of wells in the general vicinity, it is highly unlikely that groundwater can be contaminated by the proposed activities of EWMS.

With strict process controls, a robust disaster mitigation plan and environmental impact evaluation in place, it is expected that all activities of EWMS can be carried out safely and with minimal impact to the environment.

ARTISTIC IMPRESSION OF PROPOSED PROJECT



AERIAL TOP VIEW



PERSPECTIVE VIEW FROM THE FRONT

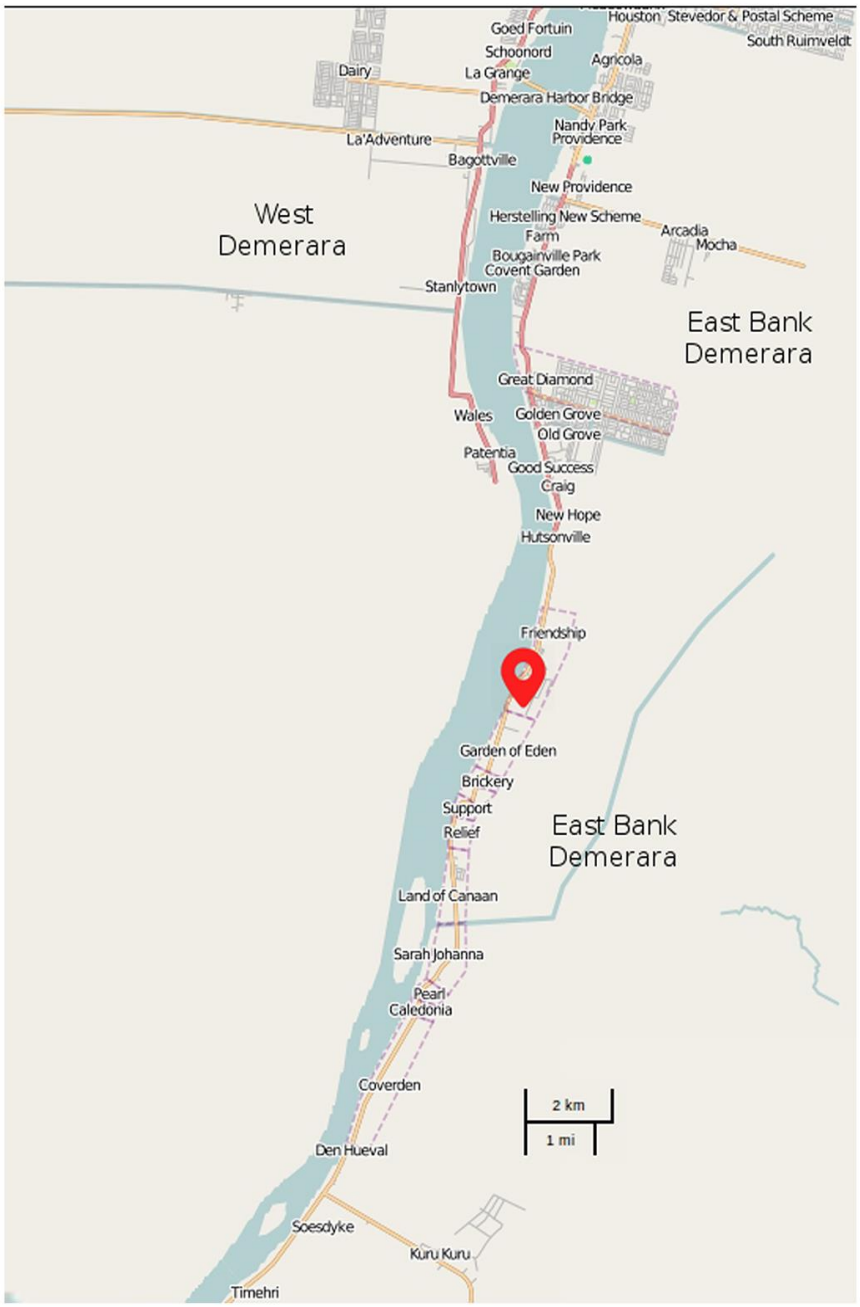
ARTISTIC IMPRESSION OF PROPOSED PROJECT

PERSPECTIVE VIEW FROM THE NORTH

PERSPECTIVE VIEW FROM THE SOUTH

LOCATION MAP

EWMS at Lot 21 and 22 Block XXVIII Zone EBD
Plantation Friendship, East Bank Demerara



Appendices

WATER ANALYSIS TEST IN PROCESS

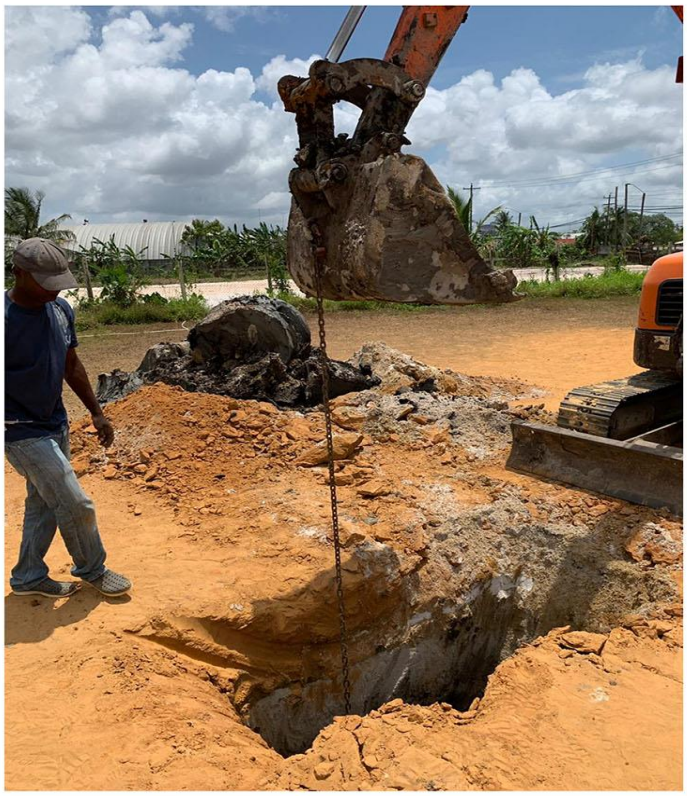
[Water sample being taken]

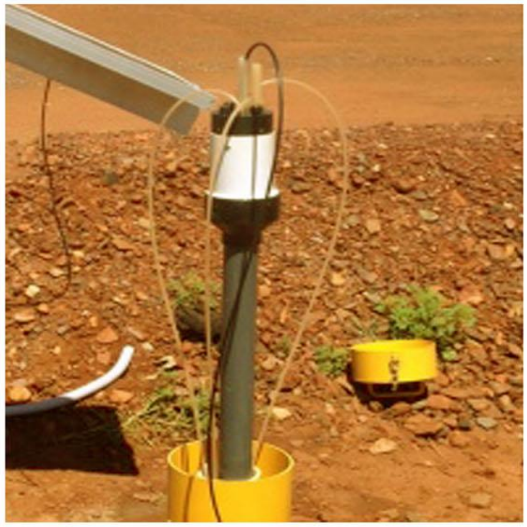
WATER ANALYSIS TEST IN PROCESS

[Water sample being read]

HYDROLOGICAL TEST IN PROCESS

[Excavation showing layers immediately below surface]





LABORATORY TEST IN PROCESS

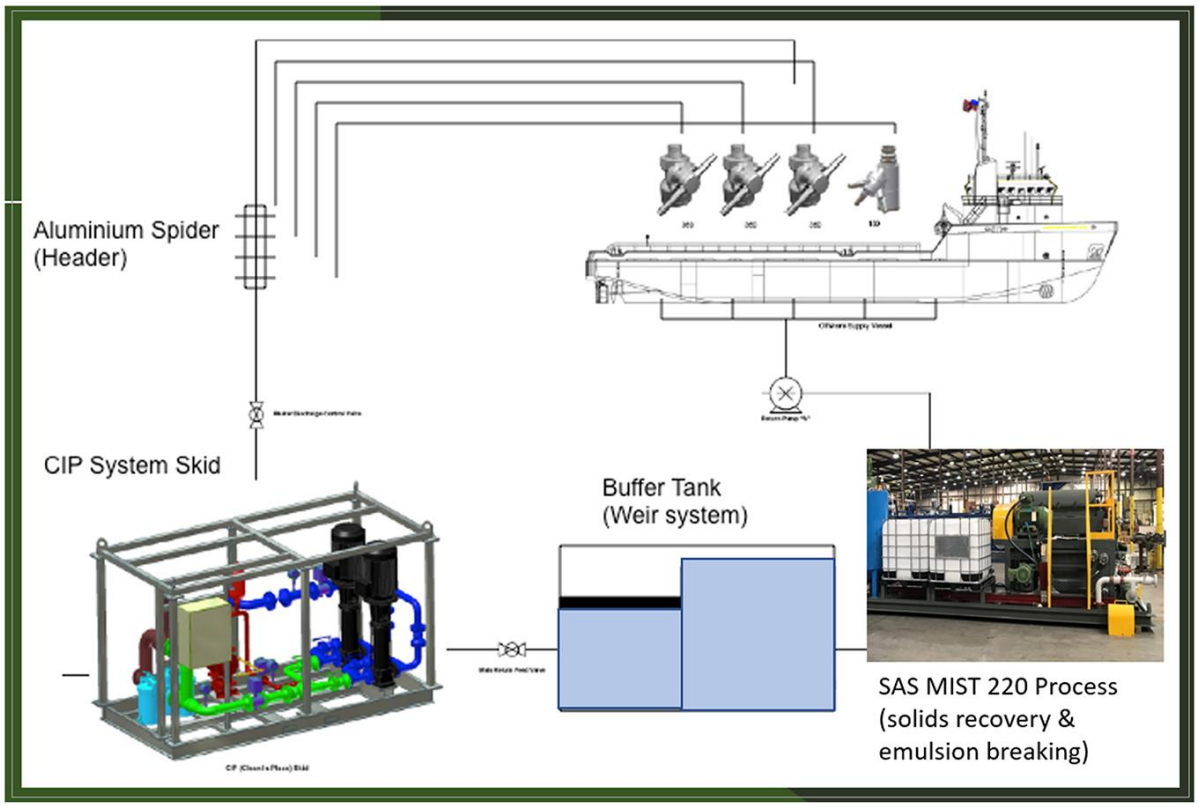
[Surface soil samples being dried in analysis laboratory]

SOIL CLASSIFICATION PROCESS

[Soil samples being taken]

PROCESS FLOW (Option 1)

Use of SAS MIST 220 Process (with or without SAS Chemistry) to minimize waste production on location and maximize the recycling of aqueous wash fluid.



PROCESS FLOW (Option 2)

Use of SAS MIST 220 Process (with or without SAS Chemistry) to recover solids for polishing, enhance oil recovery and enable better separations of the oil and water phases – thus maximizing efficiencies and waste throughput on location.

FILAB
SURINAME

Certified ISO 9001-2015

Environmental Waste Management Services Guyana

GUYANA

ANALYTICAL REPORT
190443

Receiving date	05/17/19
Project ID	
Client ref.	Enviro Waste Guyana 1705'19 ICP
Number of samples	6
Code(s)	ICPA
Analysis	GEOCHEM SAMPLE ICPA
Sample type	Soil
Final report on (date)	05/21/19

TECHNICAL SUPERVISION : Laurent SIMON
FILAB Deputy General Manager

QUALITY CONTROL AND VALIDATION : Guy SIMON
FILAB General Manager

FILAB SURINAME N.V.
ALS representative in Suriname - A lab operated by FILAB AMSUD SAS
Aboenawrokostraat #71 - PARAMARIBO - Suriname - South America
Tel: (597) 455 857 & 455 979 - Fax: (597) 455 926 - E-mail: info@filabsuriname.com

190443																					
SAMPLE ID	SAMPLE REF.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ge ppm	K %	La ppm	Li ppm	Mg %	Mn ppm	Mo ppm
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CTRL																					
DUPLICATE																					
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190443_QC2	SS2																				
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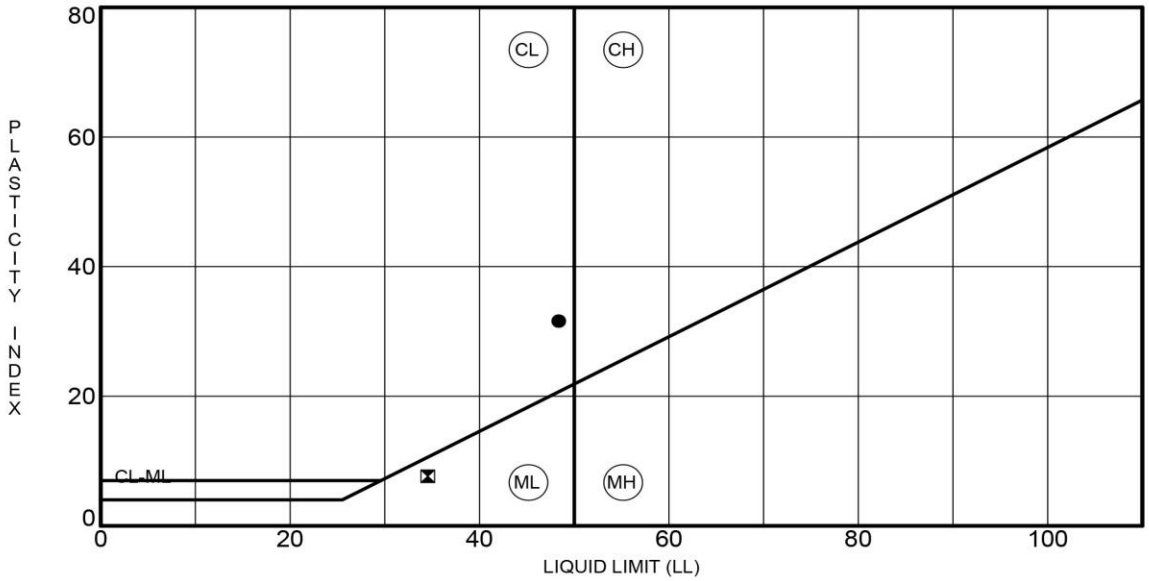
Ref. values		<2	1.326	75	12	215	<2	no value	11.286	2	12	34	191	2.106	no value	0.342	no value	14	1.106	457	<5

SAMPLE ID	SAMPLE REF.	Na %	Nb ppm	Ni ppm	P %	Pb ppm	S %	Sb ppm	Sc ppm	Se ppm	Sn ppm	Sr ppm	Ta ppm	Te ppm	Ti ppm	Tl ppm	V ppm	W ppm	Y ppm	Zn ppm	Zr ppm
	Quant. Lim.	0.010	5	2	0.010	2	0.010	5	5	5	5	2	5	5	2	5	5	5	2	2	5
190443-001	EWMS-1	0.011	23	56	< 0.01	6	0.014	15	< 5	12	< 5	< 2	< 5	< 5	434	< 5	39	< 5	< 2	30	43
190443-002	EWMS-2	< 0.01	12	78	0.015	10	0.012	23	< 5	21	< 5	< 2	< 5	< 5	243	< 5	23	< 5	< 2	13	16
190443-003	EWMS-3	< 0.01	15	86	0.018	4	0.013	25	< 5	6	< 5	< 2	< 5	< 5	299	< 5	23	< 5	< 2	9	20
190443-004	EWMS-4	0.044	16	109	0.019	36	0.014	31	< 5	< 5	< 5	< 2	9	< 5	304	< 5	20	< 5	< 2	42	12
190443-005	EWMS-5	< 0.01	23	35	< 0.01	3	0.014	11	< 5	31	< 5	< 2	< 5	< 5	468	< 5	30	< 5	< 2	9	34
190443-006	EWMS-6	< 0.01	28	41	0.011	4	< 0.01	10	< 5	6	< 5	< 2	< 5	< 5	568	< 5	34	< 5	< 2	11	41
CTRL																					
DUPLICATE																					
190443-006	EWMS-6	< 0.01	28	40	0.01	5	< 0.01	12	< 5	5	< 5	< 2	< 5	< 5	567	< 5	35	< 5	< 2	10	46
REF. MATERIALS																					
190443_QC1	EMAT																				
Found		0.063	39	60	0.165	768	0.185	5	< 5	< 5	314	107	< 5	< 5	521	< 5	26	12	9	1105	6
Ref. values		0.065	no value	59	0.155	764	0.192	6	no value	<5	340	114	no value	no value	530	<5	27	no value	no value	1114	no value
190443_QC2	SS2																				
Found		0.06	45	53	0.08	124	0.221	< 5	5	< 5	< 5	222	< 5	< 5	873	< 5	35	< 5	14	471	7
Ref. values		0.056	no value	54	0.075	126	0.212	<5	no value	<5	no value	214	no value	no value	850	<5	34	no value	12	467	no value

PROCESS FLOW (Option 2)

Use of SAS MIST 220 Process (with or without SAS Chemistry) to recover solids for polishing, enhance oil recovery and enable better separations of the oil and water phases – thus maximizing efficiencies and waste throughput on location.



	Boring No.	Sample No.	LL	PL	PI	Fines	Classification
●	**EWMS 1**		**48**	**17**	**32**	**98.0**	**LEAN CLAY CL**
⊠	**EWMS 2**		**35**	**27**	**8**	**99.0**	**SILT ML**

PROJECT **Environmental Waste Management Service -**

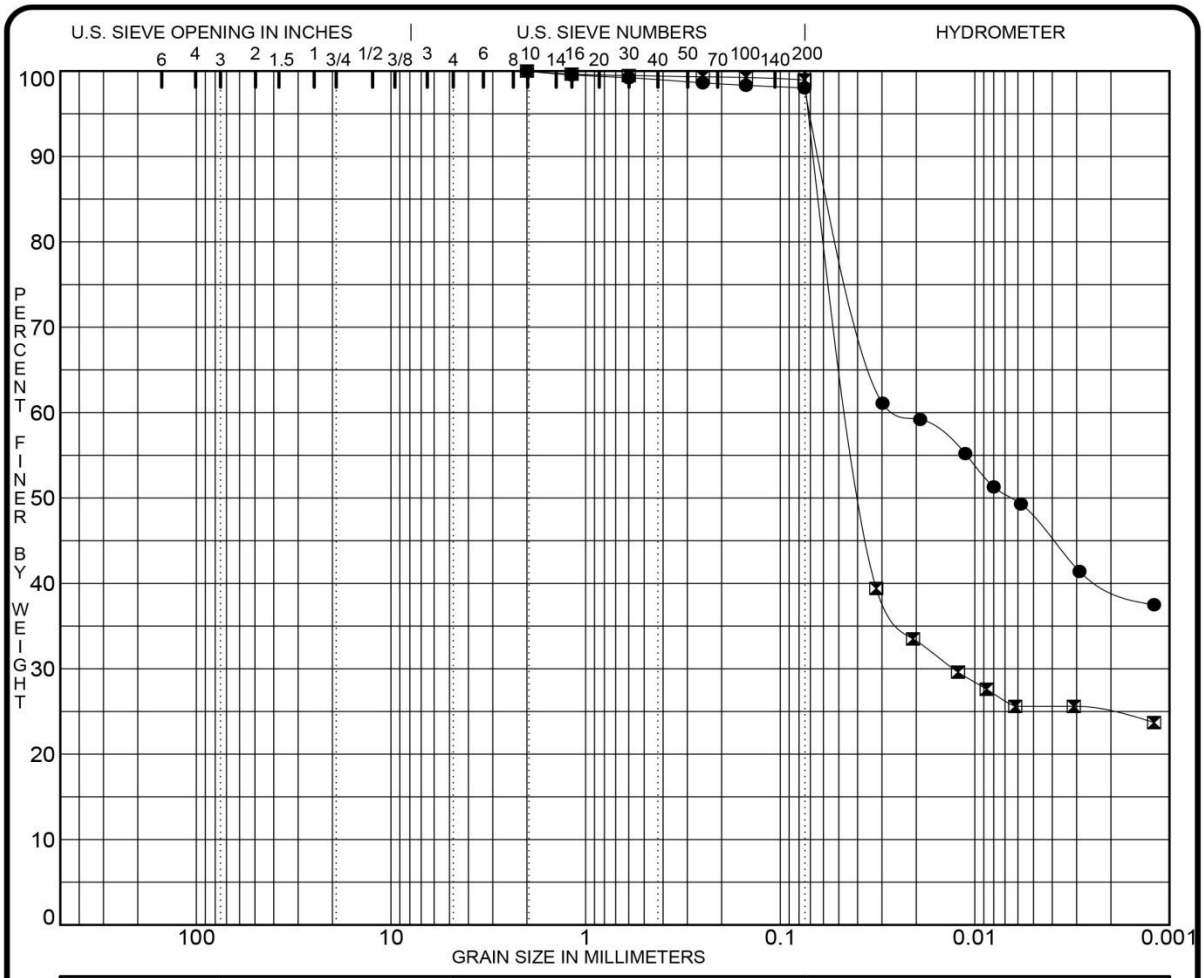
JOB NO.

DATE **6/12/19**

ATTERBERG LIMITS' RESULTS

GROUND STRUCTURES ENGINEERING CONSULTANTS INC.

Lot GSEC, Liliendaal, E.C.D, Guyana



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Location Sample No.	Classification	MC%	LL	PL	PI	Cc	Cu
●	**EWMS 1**	**LEAN CLAY CL**		**48**	**17**	**32**		
⧓	**EWMS 2**	**SILT ML**		**35**	**27**	**8**		

	Location Sample No.	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**EWMS 1**	**2.00**	**0.02**			**0.0**	**2.0**	**50.4**	**47.6**
⧓	**EWMS 2**	**2.00**	**0.04**	**0.013**		**0.0**	**1.0**	**73.4**	**25.6**

PROJECT **Environmental Waste Management Service -** JOB NO.

DATE **6/12/19**

GRADATION CURVES

GROUND STRUCTURES ENGINEERING CONSULTANTS INC.

Lot GSEC, Liliendaal, E.C.D, Guyana

Water Analysis Test

Water Analysis Test

Operator Name	Rory Forde	**Date Sampled**	11th April 2019
Address	21-22 Friendship EBD	**Time Sampled**	
Field or Area	Borehole 1	**Temperature**	29 deg. Celsius
Elevation		**Apparatus**	Ultrameter II
Location	6deg 39min 17sec N, 58deg 11min 27sec		

Calibration 442 Natural Water Standard
Conductivity 23.80 microsiemens @29.4 degrees C
Resistivity - 11.1 ppm/NaCl
TDS - 15ppm/442

Sample Number	Location	Resistivity (NaCl ppm)	Total Dissolved Solids (ppm)	Conductivity (microsiemens)
EWMS-W-1	Borehole	30.9	689.5	941.1
EWMS-W-2	Borehole	31.5	690.3	942.6
EWMS-W-3	Borehole	32.6	689.2	948.5
EWMS-W-4	Borehole	30.5	688.6	944.8
EWMS-W-5	Borehole	30.8	692.1	942.4
EWMS-W-6	Demerara River		17.84	18.92

Oil Gator Material Safety and Data Sheet.

This Material Safety Data Sheet was created in accordance with EC Directive 91/155/EEC.
Date of Issue: Issue # 2008, revised January 2008
Replaces: Issue # 2007, revised January 2007
Trade Name: **OIL GATOR**

1. IDENTIFICATION OF THE PRODUCT AND COMPANY

1.1 Product Name: OIL GATOR Unique Ref #: GS-10
1.2 Product Use: To absorb, encapsulate & bioremediate unwanted hydrocarbons.
1.3 Company Name: GATOR INTERNATIONAL (B.N. 89499 8780)
Suite 212, 113-437 Martin Street, Penticton, BC V2A 5L1 Canada
Tel: 1 250 493 3635, Fax: 1 250 493 9347
Website: www.gatorinternational.com
1.4 Emergency Tel. #: 1 250 493 3635

2. COMPOSITION

2.1 Characterization: A natural agricultural cellulose product for the absorption, encapsulation and bioremediation of unwanted petroleum hydrocarbons.
Substance: Cellulose Content: 95-98% CAS No.: 9004-34-6
Classification: None Allocated
Risk Phrases: None Allocated (as per EEC Council Directive 67/548/EEC)
Substance: Ammonium Sulfate Content: 2-5% CAS No.: 7783-20-2
Classification: None Allocated
Risk Phrases: None Allocated (as per EEC Council Directive 67/548/EEC)

3. HAZARDS IDENTIFICATION

Not classified as hazardous according to criteria of OSHA.
The bacteria in this product are considered indigenous to any agriculturally produced material.
None of the bacteria are considered harmful to humans, flora or fauna.
Bacterial identification and viable counts are considered proprietary information.

4. FIRST AID MEASURES

4.1 Eye Contact: Hold eyes open and flood with water for 10 minutes.
Seek medical attention if irritation persists.
4.2 Skin Contact: If irritation or redness results from prolonged skin contact seek medical attention.
4.3 Ingestion: Thoroughly rinse mouth with water. Drink 1-2 glasses of water.
Do not induce vomiting. If discomfort arises seek medical attention.

MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet was created in accordance with EC Directive 91/155/EEC.

Date of Issue: Issue # 2008, revised January 2008

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Trade Name: **OIL GATOR**

4.4 Inhalation: If respiratory difficulties occur remove from dusty area and into fresh air. Seek medical attention if symptoms persist.

4.5 First Aid Facilities: Sterile eyewash solution for treatment of nuisance dusts.

4.6 Advice to Doctor: Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing Media: Suitable: Water spray, carbon dioxide or dry chemical powder. Unsuitable: No Restrictions.

5.2 Special Hazards in Fire: Combustible powder but difficult to ignite as the product contains a known fire suppressant. If burning, firefighters should treat as a wood fire.

Hazardous Combustion Products: No hazardous decomposition products are known. Combustion by-products include carbon monoxide, carbon dioxide and acrid smoke.

Special Protective Equipment for Fire Fighters: None Required.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions: Wear appropriate protective equipment to prevent exposure. (See Section 8: Exposure Controls)

6.2 Environmental Precautions: No special considerations.

6.3 Methods for Cleaning:

Small Spills: Sweep up and place in clean labeled container for disposal.

Large Spills: Sweep up and place in clean labeled container for disposal.

7. HANDLING & STORAGE

7.1 Handling: Material is not classified as a dangerous or hazardous.

No special handling requirements are necessary.

If repackaging ensure new containers are properly labeled.

7.2 Storage: Keep in a cool dry area. Avoid creating excessive dust. Risk of spontaneous combustion is low as the product contains a known fire suppressant.

MATERIAL SAFETY DATA SHEET

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Date of Issue: Issue # 2008, revised January 2008

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Trade Name: **OIL GATOR**

8. EXPOSURE CONTROLS

8.1 Engineering: No special ventilation is required under normal use. If handling large amounts of material in an enclosed area the use of exhaust ventilation may be necessary to keep dust levels as low as possible.

8.2 Personal Protective Equipment:

Eye Protection: Eye protection not needed under normal conditions. Goggles are recommended only if significant dust levels are created.

Skin Protection: Gloves not needed under normal conditions. Cloth gloves are recommended only if handling large quantities of material.

Respiratory Protection: Dust mask not necessary under normal conditions. Disposable half face dust mask is recommended if exposed to high concentrations of dust.

Other Protection: Other protective clothing not required under normal conditions.

8.3 Industrial Hygiene: Avoid inhalation of nuisance dust.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Appearance: Brown, fibrous powder.

9.2 Odor: None.

9.3 Change in Physical State: Boiling Point: Not Applicable. (deg. C @ 760 mm Hg)
Melting Point: Not Applicable. (deg. C @ 760 mm Hg)

9.4 Thermodynamic Information: Flash Point: Not Available.
Auto-Ignition Temp.: Similar to paper.
L.E.L.: 50,000 mg/m_3 in air
U.E.L.: Not Available.

9.5 Physical Parameters: Specific Gravity: (H_2O=1) 1.15
Vapor Pressure: Not Relevant (@ 25 °C (mm Hg))
pH Value: 4.5-6 in water.
Solubility in Water: Insoluble.
Percent Volatiles: None.
Particle Size Range: Not Available.

MATERIAL SAFETY DATA SHEET

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Trade Name: **OIL GATOR**

10. STABILITY & REACTIVITY

10.1 Conditions to Avoid: Not reactive under conditions of normal use.

10.2 Materials to Avoid: Material is incompatible with strong oxidizers.

10.3 Dangerous Reactions: Will not polymerize.
May evolve ammonia gas if in contact with strong bases.

10.4 Hazardous Decomposition Products: None, when used and handled as intended.

11. TOXICOLOGICAL INFORMATION

11.1 Acute Toxicity:

Swallowed: Unlikely as an exposure route. The product is primarily natural cellulose. It is physiologically inert and non-harmful if swallowed. Bacteria typically found on agricultural products may be present and are not considered harmful.

Eye: Dust particles may cause mechanical irritation resulting in redness.

Skin: Absorption through skin highly unlikely. Unlikely to be a skin irritant. Repeated skin contact may cause redness. In some individuals overexposure may aggravate an existing medical condition or skin sensitivity.

Inhaled: Inhalation of excessive dust may cause irritation to the mucous membranes of the nose, throat and respiratory tract. Persons with a history of respiratory illness should avoid exposure to significant levels of dust.

11.2 Chronic Toxicity: No data available.

12. ECOLOGICAL INFORMATION

12.1 Aquatic Toxicity: No data available.

13. DISPOSAL CONSIDERATIONS

This product is a natural cellulose material and can be discarded into regular garbage or incinerated by approved methods. If the material has been used to absorb petroleum hydrocarbons you should consult your applicable Waste Management Authority to ensure proper disposal.

MATERIAL SAFETY DATA SHEET

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14. TRANSPORT INFORMATION

Dangerous Goods Class: None Allocated.
UN Number: None Allocated
Hazchem Code: None Allocated
Poisons Schedule: None Allocated

15. REGULATORY INFORMATION

Exposure Standards:

OSHA-PEL: 15 mg/m^3 (cellulose – total dust), 5 mg/m^3 (cellulose – respirable dust)

16. OTHER INFORMATION & CONTACT POINT

This product is manufactured from cellulose. This product is completely biodegradable and contains 95% recycled content. The material contains naturally occurring bacteria and fungi indigenous to agricultural environments. The bacteria and fungi are not man-made, genetically modified or cultured in any way. None of the bacteria or fungi are considered harmful to humans, flora or fauna.

GATOR INTERNATIONAL
Tel: 1 250 493 3635 Fax: 1 250 493 9347
Contact: Ted Dickerson, Technical Director
Email: sales@gatorinternational.com
Internet: www.gatorinternational.com

ADVICE NOTE:

This Material Safety Data Sheet (MSDS) summarizes our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user must review this MSDS and consider the information in the context of how the product will be handled and used in the workplace. When used for liquid spill clean-up, sorbents tend to take on the characteristics of the liquid they have absorbed. Thus, always consult the MSDS of the spilled liquid prior to absorption with Oil Gator. If clarification or further information is needed to ensure that an appropriate risk assessment can be made the user should contact this company. Our responsibility for this product is subject to our standard terms and conditions a copy of which is also available on request.