

Environmental Assessment of Ogoniland Site Specific Fact Sheets

OMUNWANNWAN- SIME



This fact sheet is part of a series prepared as part of the Environmental Assessment of Ogoniland by the United Nations Environment Programme (UNEP). It provides the observations and results from one of the individual sites studied in detail, plus the specific risk reduction measures for follow-up action.

This fact sheet should be read in conjunction with the main assessment report available at: www.unep.org/nigeria.

July 2011

I - Site Description

Site Name	OMUNWANNWAN- SIME
Site Number	qc_012-001
LGA	ELEME
Main community	SIME OMUNWANWAN
Surrounding communities	SIME SIME OMUNWANWAN
Investigated area (ha)	188.88
Category	SPDC Pipeline ROW
Eastings (WGS 84, Zone 32N)	301130
Northings (WGS 84, Zone 32N)	527980



<p>Recommendations for risk reduction</p>	<ul style="list-style-type: none"> - Communities should be informed in community meetings about health and safety precautions. - A community based security and surveillance system should be put in place so that there is voluntary compliance with the restrictions which are needed to protect public health. - The impacted area should be demarcated and appropriate signage put in place to indicate that the site is impacted. - Highly contaminated core areas should be fenced and guarded until emergency cleanup measures have been carried out. - Floating oil on the surface, if any, should be collected and treated off site. - The site should be remodelled to prevent run off from the contaminated area into the downstream swamps. - Runoff from the area should be monitored and if necessary collected and treated while the cleanup plan is developed and implemented. - Additional soil sampling along with trial pits should be done at the contaminated site to delineate the site to be excavated for clean up. - A detailed plan should be prepared for clean up of the contaminated soil and risk reduction at site. - A system of ground water monitoring wells should be installed to act as early warning for communities which are not yet impacted by ground water contamination. - A detailed plan should be prepared for clean up of the contaminated water and risk reduction in the community. - While undertaking the clean up, management of excavation water should be handled properly to ensure that no pollutants are emitted into the environment without control.
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II - Oilfield Infrastructure Type

Wells	No
Flowstations	No
Manifolds	No
Flaresites	No
Oil pipeline in operation	24" NKPOKU TO BOMU TRUNKLINE 36" RUMUEKPE TO NKPOKU TRUNKLINE
NNPC crude line	No
NNPC product line	No

III - Spill History

Spills reported by SPDC	Incident Number	Incident Date
	2002_00052	20020201
	2001_00168	20010614
	2001_00169	20010614
	2007_00382	20071219
	2008_00262	20081217
Spill reported by community	Yes	

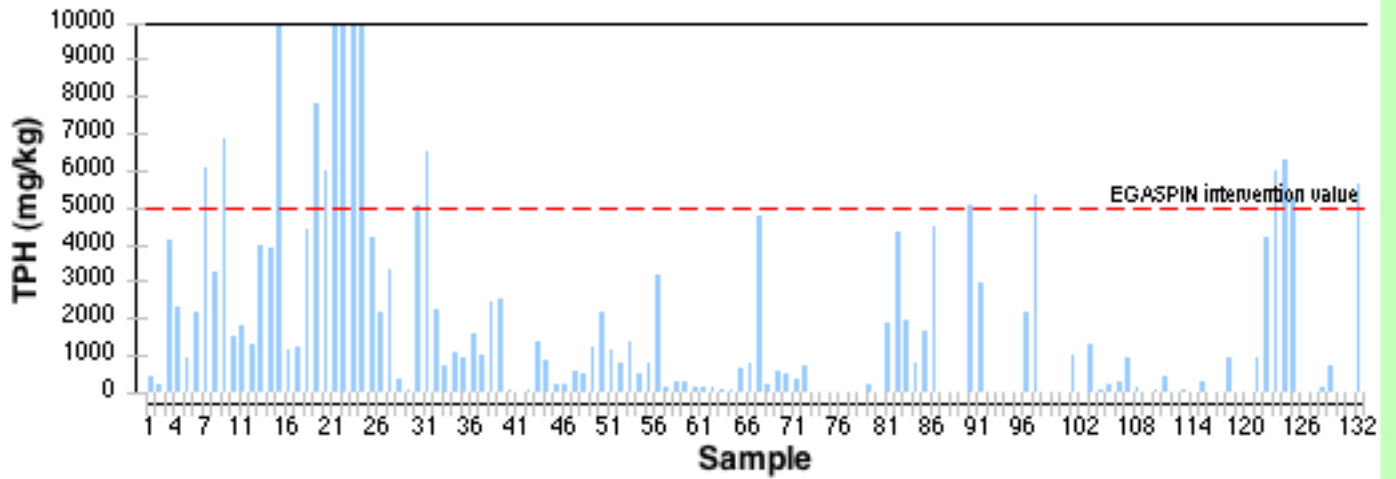
IV - Data Screening

Assessment criteria

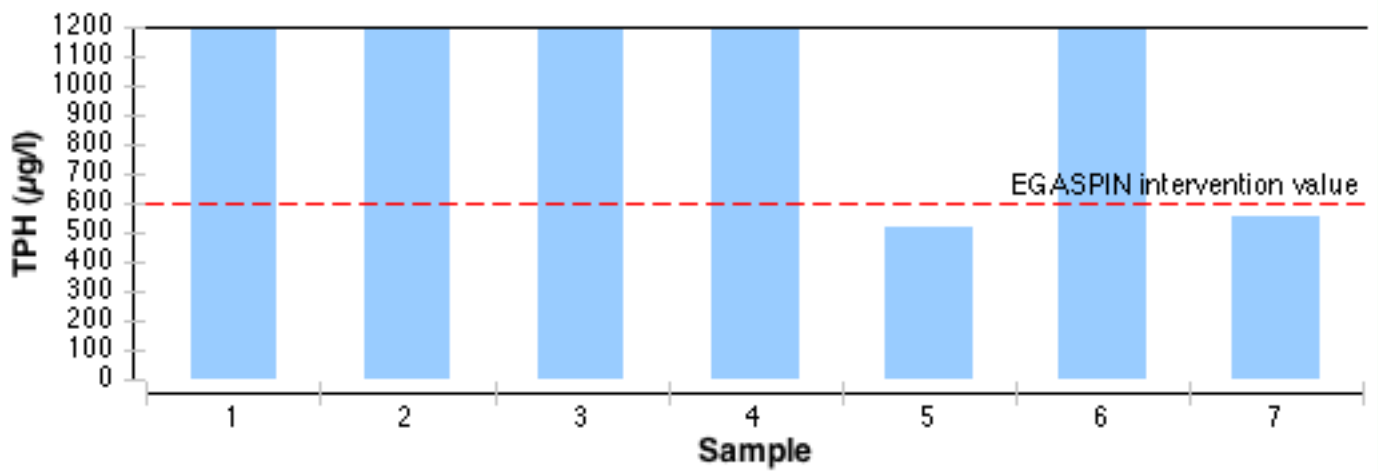
Soil contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 50 mg/kg)
Groundwater contamination	Nigerian standards EGASPIN (intervention value 600 µg/l; target value 50 µg/l)
Sediment contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 50 mg/kg)
Drinking water contamination	WHO guidelines (benzene: 10 µg/l) Nigerian drinking water standards (mineral oils: 3 µg/l)

Number of soil samples	132
Deepest investigation (m)	5
Maximum soil TPH (mg/kg)	36,900.000
Number of soil measurements greater than EGASPIN intervention value	17
Deepest sample greater than EGASPIN (m)	5
Number of soil measurements below 1m	109
Number of soil measurements below 1m greater than EGASPIN intervention value	14
Number of ground water samples	7
Maximum groundwater TPH (µg/l)	133,000
Number of groundwater measurements greater than EGASPIN intervention value	5
Number of community well samples	0
Presence of hydrocarbons in community wells	Not applicable
Number of CL sediment samples	0
Maximum CL sediment TPH (mg/kg)	Not applicable
Number of CL sediment measurements greater than EGASPIN intervention value	0
Presence of hydrocarbons in sediment above EGASPIN intervention value	Not applicable

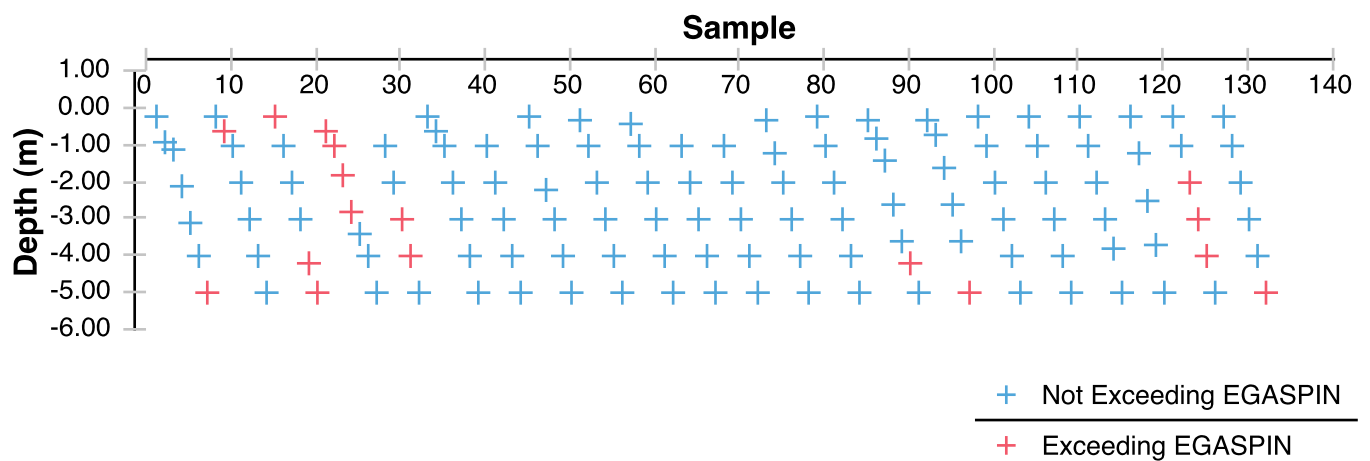
Soil Samples



Groundwater Samples



Soil Samples depth



Satellite image of the site



Sampling location map



Oil Facilities

- SPDC Right of way
- Wells
- Manifold
- Flow Station
- Pipeline**
- NNPC Crude
- NNPC Refined product
- SPDC Oil Pipe in operation

Soil samples

- Grassplot centroid
- Soil samples
- Soil Samples from GW monitoring well
- Grassplot sampling area
- Approximate site investigation area (that area does not correspond to contamination extent).

Others

- Air quality sampling
- Fish tissue sampling
- Sediment samples from Acquatic team
- Water Samples from Acquatic team

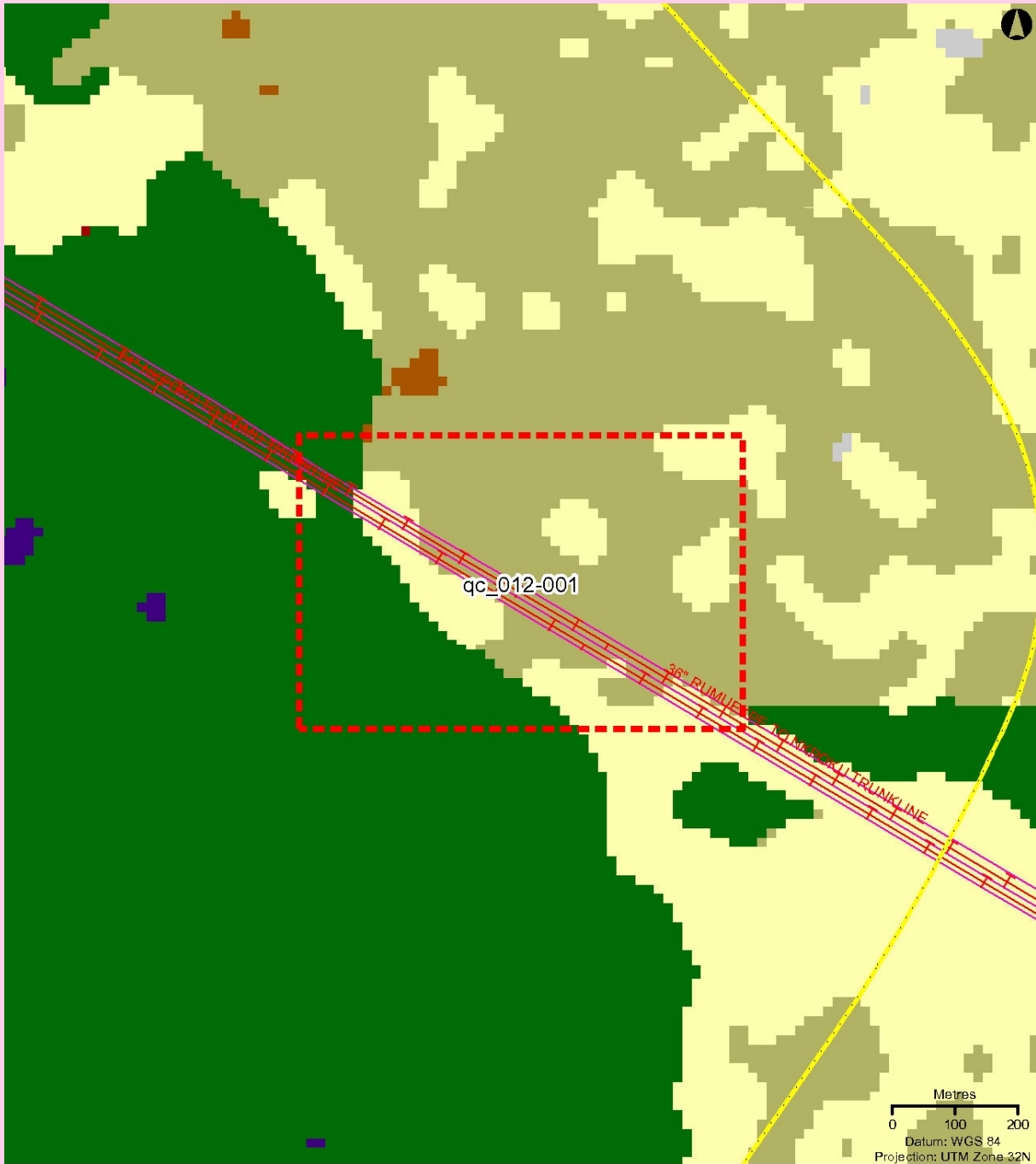
Water samples

- Rainwater samples (Community)
- Bore-well (community)
- Hand-dug well (community)
- Free-Phase samples
- Groundwater sample
- Surface water
- Water sample taken from an oil well
- Drilling well

Metres
0 25 50

Datum: WGS 84
Projection: UTM Zone 32N

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Oil Facilities

- SPDC Right of way (ROW)
- w** Wells
- Manifold
- FlowStation
- Pipeline
 - NNPC Crude
 - NNPC Refined product
 - SPDC Oil Pipe in operation

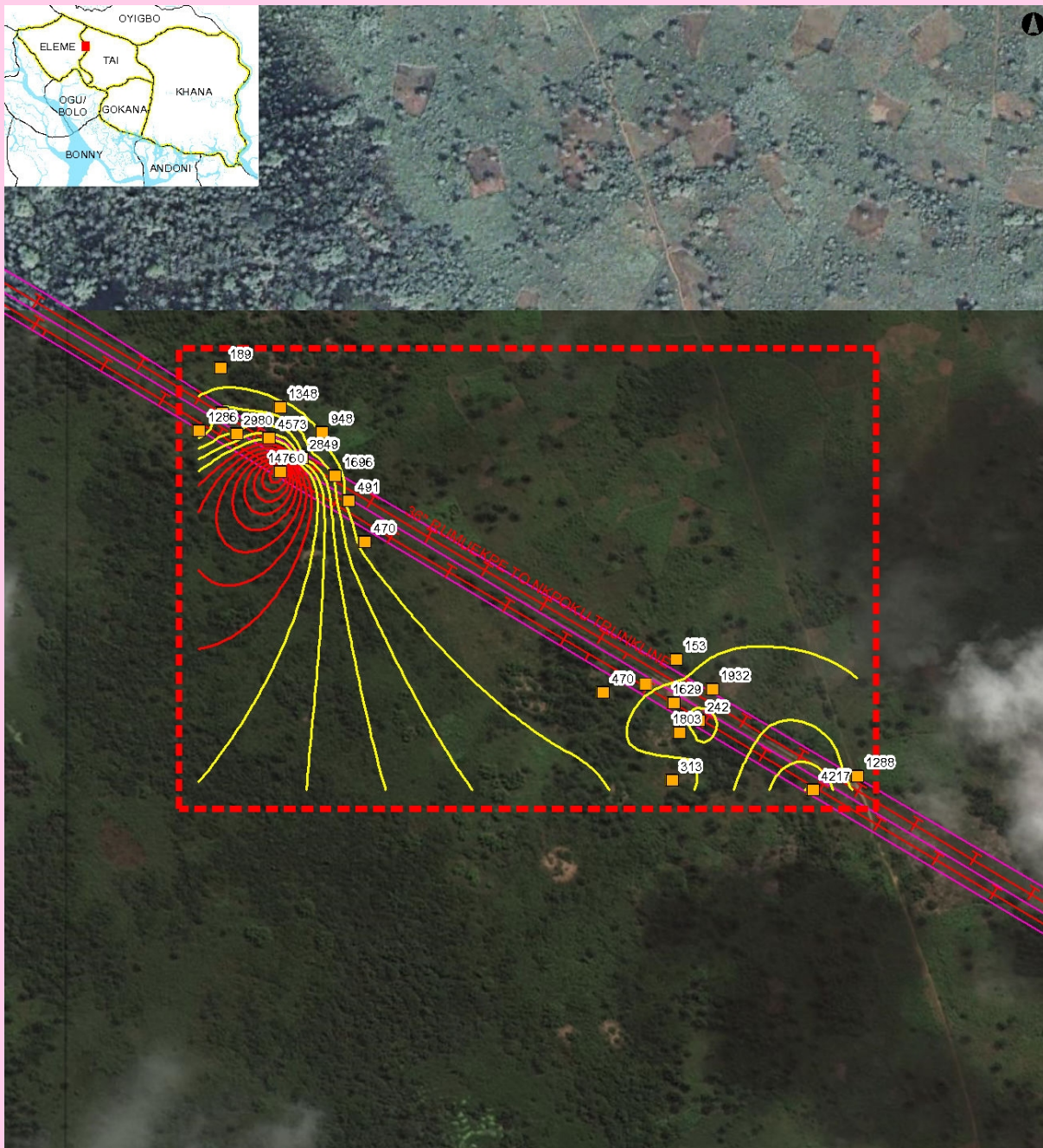
Approximate site investigation area (that area does not correspond to contamination extent).

- Tree plantation
- Farmland, low tree cover
- Farmland, high tree cover
- Fallow land
- Riparian forest, including fresh water swamp forest
- Forest on former beach ridge
- Mangrove
- Mangrove, degraded
- Urban
- Bare soil, terrestrial
- Bare soil, mud flat
- Water

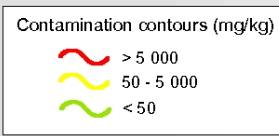
Source:
land cover 2007
from Aster imagery

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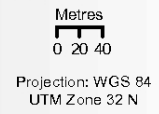
Soil Contamination Map



- Oil Facilities**
- SPDC Right of way (ROW)
 - w Wells
 - Manifold
 - ▲ FlowStation
- Pipeline**
- NNPC Crude
 - NNPC Refined product
 - SPDC Oil Pipe in operation



- Soil samples**
- Soil samples
 - Grassplot centroid
 - Grassplot sampling area
 - Investigated area
 - Groundwater flow direction



— Approximate site investigation area (that area does not correspond to contamination extent).

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The values shown next to soil sample points represent the average TPH value for all samples taken from the borehole at that location.

Ground photograph



VII - Sample List

Soil sample list

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2516808	not analyzed for TPH	2.00	301250	527873
2516809	not analyzed for TPH	3.00	301250	527873
2516810	not analyzed for TPH	5.00	301250	527873
2516811	not analyzed for TPH	1.20	301250	527873
2516813	not analyzed for TPH	4.00	301250	527873
2516815	not analyzed for TPH	0.30	301250	527873
2516816	not analyzed for TPH	1.00	301284	527824
2516817	1,880.000	2.00	301284	527824
2516818	4,360.000	3.00	301284	527824
2516819	1,940.000	4.00	301284	527824
2516820	800.000	5.00	301284	527824
2516822	2,930.000	5.00	301278	527854
2516823	1,690.000	0.30	301278	527854
2516825	4,490.000	0.80	301278	527854
2516827	not analyzed for TPH	1.40	301278	527854
2516828	not analyzed for TPH	2.60	301278	527854
2516831	not analyzed for TPH	3.60	301278	527854
2516833	not analyzed for TPH	0.70	301317	527868
2516835	not analyzed for TPH	0.30	301317	527868
2516836	not analyzed for TPH	2.60	301317	527868
2516837	not analyzed for TPH	1.60	301317	527868
2516838	not analyzed for TPH	1.00	301206	527865
2516839	1,030.000	3.00	301206	527865
2516840	not analyzed for TPH	0.20	301206	527865
2516842	not analyzed for TPH	4.00	301206	527865
2516843	not analyzed for TPH	2.00	301206	527865
2516845	not analyzed for TPH	5.00	301276	527776
2516846	103.000	0.20	301276	527776
2516847	181.000	1.00	301276	527776
2516848	not analyzed for TPH	3.80	301280	527898
2516849	not analyzed for TPH	2.00	301280	527898
2516850	47.700	3.00	301280	527898
2516851	not analyzed for TPH	5.00	301303	527836
2516854	not analyzed for TPH	0.20	301303	527836
2516855	not analyzed for TPH	1.20	301303	527836
2516856	not analyzed for TPH	3.70	301303	527836
2516857	927.000	0.20	301419	527766
2516859	4,160.000	1.00	301419	527766
2516861	5,290.000	4.00	301419	527766
2516862	not analyzed for TPH	5.00	301419	527766

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2516863	not analyzed for TPH	3.00	301464	527780
2516864	708.000	2.00	301464	527780
2516866	not analyzed for TPH	0.20	301464	527780
2516868	not analyzed for TPH	4.00	301464	527780
2517855	287.000	5.00	301280	527898
2517879	447.000	1.00	301280	527898
2517904	2,170.000	3.60	301317	527868
2517930	5,990.000	2.00	301419	527766
2517954	940.000	3.00	301276	527776
2517990	5,620.000	5.00	301464	527780
2518043	186.000	0.20	301284	527824
2518079	1,320.000	5.00	301206	527865
2518098	175.000	4.00	301276	527776
2518120	932.000	2.50	301303	527836
2518223	139.000	1.00	301464	527780
2518262	6,290.000	3.00	301419	527766
2518284	81.900	0.20	301280	527898
2518305	5,350.000	5.00	301317	527868
2518322	5,080.000	4.20	301278	527854
2522080	102.000	2.00	300900	528103
2522082	2,530.000	5.00	300934	528085
2522083	1,080.000	0.60	300934	528085
2522085	28.200	2.00	300948	528059
2522086	727.000	5.00	300964	528018
2522087	909.000	3.10	300819	528148
2522088	6,060.000	5.00	300819	528148
2522089	632.000	3.00	300796	528130
2522090	206.000	1.00	300964	528018
2522091	511.000	3.00	300964	528018
2522092	3,310.000	5.00	300878	528089
2522093	5,990.000	5.00	300867	528123
2522094	1,580.000	2.00	300934	528085
2522096	2,150.000	5.00	300921	528129
2522097	6,840.000	0.60	300834	528127
2522099	492.000	3.00	300921	528129
2522100	3,870.000	5.00	300834	528127
2522102	821.000	4.00	300878	528154
2522103	1,130.000	1.00	300867	528123
2522104	10,700.000	0.20	300867	528123
2522105	2,270.000	5.00	300900	528103

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2522107	710.000	0.20	300934	528085
2522108	4,100.000	1.10	300819	528148
2522110	417.000	0.20	300819	528148
2522111	1,550.000	1.00	300834	528127
2522113	5,070.000	3.00	300900	528103
2522114	7,800.000	4.20	300867	528123
2522115	4,420.000	3.00	300867	528123
2522116	1,230.000	4.00	300921	528129
2522117	137.000	4.00	300818	528194
2522118	308.000	2.00	300818	528194
2522119	151.000	5.00	300818	528194
2522121	1,290.000	3.00	300834	528127
2522122	4,790.000	5.00	300796	528130
2522123	6,470.000	4.00	300900	528103
2522124	261.000	1.00	300818	528194
2522126	243.000	1.00	300921	528129
2522128	2,280.000	2.10	300819	528148
2522129	611.000	2.20	300921	528129
2522130	106.000	2.00	300796	528130
2522131	160.000	0.40	300818	528194
2522133	2,180.000	4.00	300819	528148
2522134	3,280.000	0.20	300834	528127
2522136	27,600.000	1.80	300878	528089
2522137	1,000.000	3.00	300934	528085
2522139	4,220.000	3.40	300878	528089
2522140	331.000	1.00	300900	528103
2522141	1,780.000	2.00	300834	528127
2522143	3,950.000	4.00	300834	528127
2522145	215.000	0.90	300819	528148
2522146	195.000	0.20	300921	528129
2522147	943.000	1.00	300934	528085
2522150	867.000	5.00	300948	528059
2522151	91.300	1.00	300948	528059
2522152	566.000	2.00	300964	528018
2522153	2,420.000	4.00	300934	528085
2522154	491.000	3.00	300878	528154
2522156	11,100.000	2.80	300878	528089
2522157	69.600	3.00	300948	528059
2522158	1,350.000	2.00	300878	528154
2522161	2,200.000	4.00	300878	528089

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2522162	36,900.000	0.60	300878	528089
2522163	70.800	1.00	300796	528130
2522165	28,300.000	1.00	300878	528089
2522166	1,130.000	0.30	300878	528154
2522167	1,400.000	4.00	300948	528059
2522171	3,160.000	5.00	300878	528154
2522175	830.000	4.00	300796	528130
2522177	1,250.000	2.00	300867	528123
2522178	826.000	1.00	300878	528154
2522179	341.000	4.00	300964	528018
2546722	128.000	3.00	300818	528194
2548587	285.000	2.00	301276	527776

Groundwater sample list

Sample Identifier	Total petroleum hydrocarbon (µg/l)	Easting	Northing
2516800	1,730	301206	527865
2516802	133,000	301284	527824
2516803	13,800	301276	527776
2516804	517	301464	527781
2516806	1,330	301332	527902
2522182	3,120	300948	528059
2522184	551	300786	528148

Guide to content

The Site Fact Sheets present more detailed data from UNEP's environmental assessment of Ogoniland on a site-by-site basis. Note that all data is based on the analysis of samples taken during the fieldwork period. The period of most intensive fieldwork ran from April to December 2010. The final sampling visit was completed in January 2011.

Here is a guide to the terms and abbreviations used. Please refer to the Environmental Assessment of Ogoniland report for details of EGASPIN target and intervention values.

Terminology

Site number	Reference number allocated by UNEP to identify a study site
Area (ha)	Estimated surface area (in hectares) of a given study site
Well	Oil well, also referred to as a production well
Fugro well	New well installed by Fugro at UNEP's request to enable scientific sampling and monitoring
Community well	Wells belonging to communities which are used to collect water for drinking and sanitation needs
Contamination contour	Maps that display the geographical distribution of oil contamination concentrations in an analyzed receptor
Flare site	Indicates whether the burning of unwanted gas through a pipe (or flare) takes place at a given site
Flow station	Separation facilities (also called gathering centres) which separate natural gas and water from crude oil extracted from production wells
Incident number	Numbers as supplied from the SPDC oil spills database
Manifold	An arrangement of piping or valves designed to control, distribute and often monitor fluid flow

Abbreviations

BDL	Below Detection Limit
CL	Contaminated Land
EGASPIN	Environmental Guidelines and Standards for Petroleum Industries in Nigeria
GW	groundwater
LGA	Local Government Area
mbgs	metre/s below ground surface
NNPC	Nigerian National Petroleum Corporation
SPDC	Shell Petroleum Development Company of Nigeria
TPH	total petroleum hydrocarbons
UNEP	United Nations Environment Programme

Explanatory Note

1. The recommendations given are for initial risk reduction. Final clean up would need significant additional site specific engineering as well as consultation work.
2. Spill reported by SPDC has the date format YYYYMMDD
3. Assessment is done based on a screening of the measured value against a Nigerian or international standard
4. In the soil sample maps, the highest value has been cut-off to 2 times the intervention value. This was done to visually express the exceedences above intervention values. Actual values are given in the sample tables.
5. The values of soil contamination listed in the Soil Contamination Maps are average values of all samples taken at that sampling location