

Environmental Assessment of Ogoniland Site Specific Fact Sheets

GUILEEH- KOROKORO



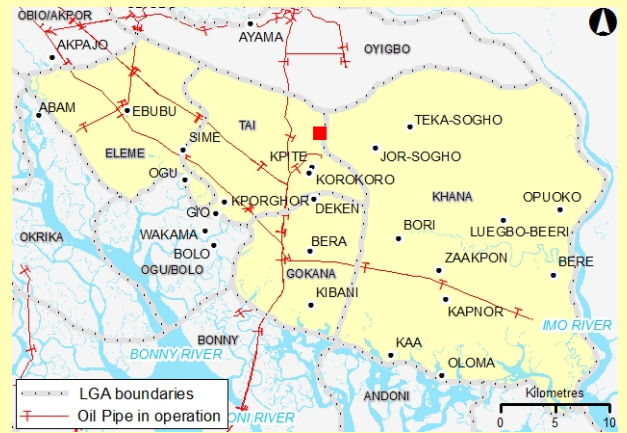
This fact sheet is part of a series prepared as part of the Environmental Assessment of Ogoniland by the United Nations Environment Programme (UNEP). It provides the observations and results from one of the individual sites studied in detail, plus the specific risk reduction measures for follow-up action.

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	GUILEEH- KOROKORO
Site Number	qc_008-008
LGA	TAI
Main community	GUILEEH KOROKORO
Surrounding communities	GUILEEH KOROKORO
Investigated area (ha)	16.76
Category	SPDC Pipeline ROW
Eastings (WGS 84, Zone 32N)	312323
Northings (WGS 84, Zone 32N)	526486



Recommendations for risk reduction	<ul style="list-style-type: none"> - Communities should be informed in community meetings about health and safety precautions. - The site should be remodelled to prevent run off from the contaminated area into the downstream swamps. - 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 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. - 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	No
NNPC crude line	No
NNPC product line	No

III - Spill History

Spills reported by SPDC	No
Spill reported by community	Yes

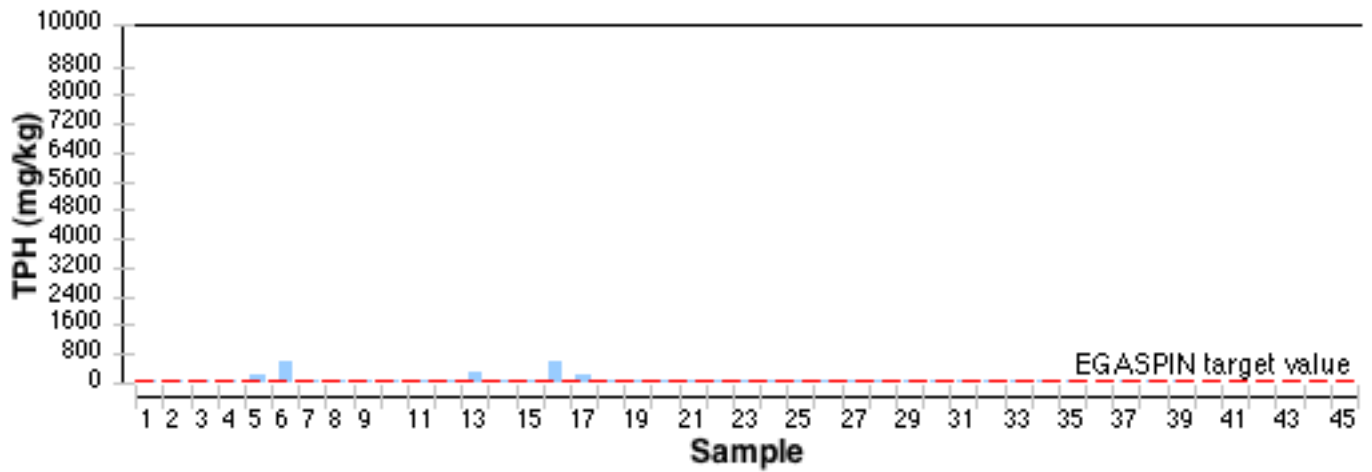
IV - Data Screening

Assessment criteria

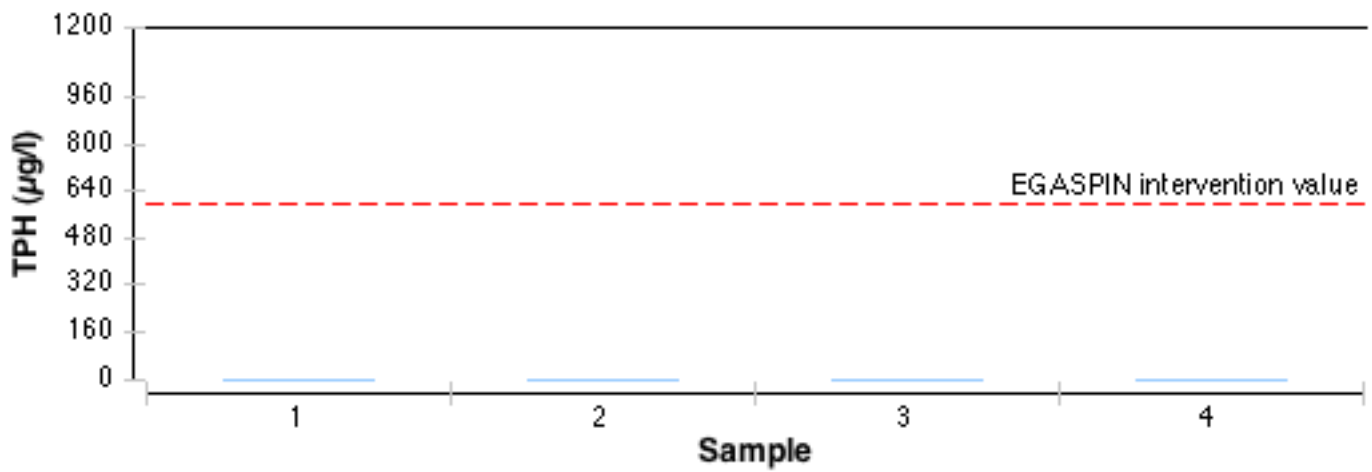
Soil contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 50 mg/kg)
Groundwater contamination	Nigerian standards EGASPIN (intervention value 600 µg/l; target value 50 µg/l)
Sediment contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 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	45
Deepest investigation (m)	5
Maximum soil TPH (mg/kg)	567.000
Number of soil measurements greater than EGASPIN intervention value	0
Deepest sample greater than EGASPIN (m)	0
Number of soil measurements below 1m	33
Number of soil measurements below 1m greater than EGASPIN intervention value	0
Number of ground water samples	4
Maximum groundwater TPH (µg/l)	10
Number of groundwater measurements greater than EGASPIN intervention value	0
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

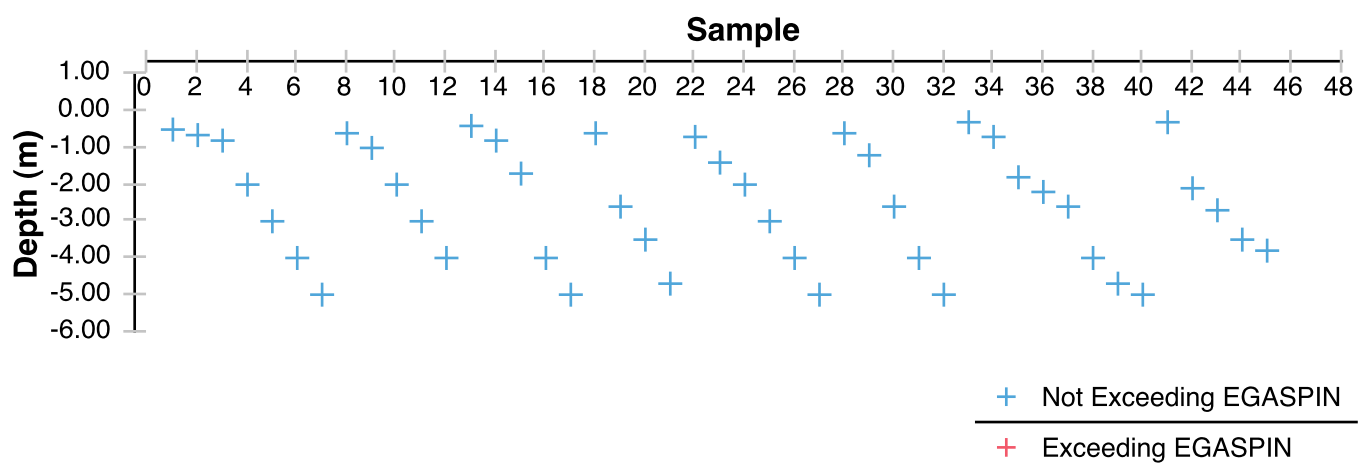
Soil Samples



Groundwater Samples



Soil Samples depth



Satellite image of the site



Metres
0 20 40
Projection: WGS 84
UTM Zone 32N



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

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Sampling location map



Oil Facilities

- SPDC Right of way
- w** Wells
- Manifold
- ▲ FlowStation
- 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

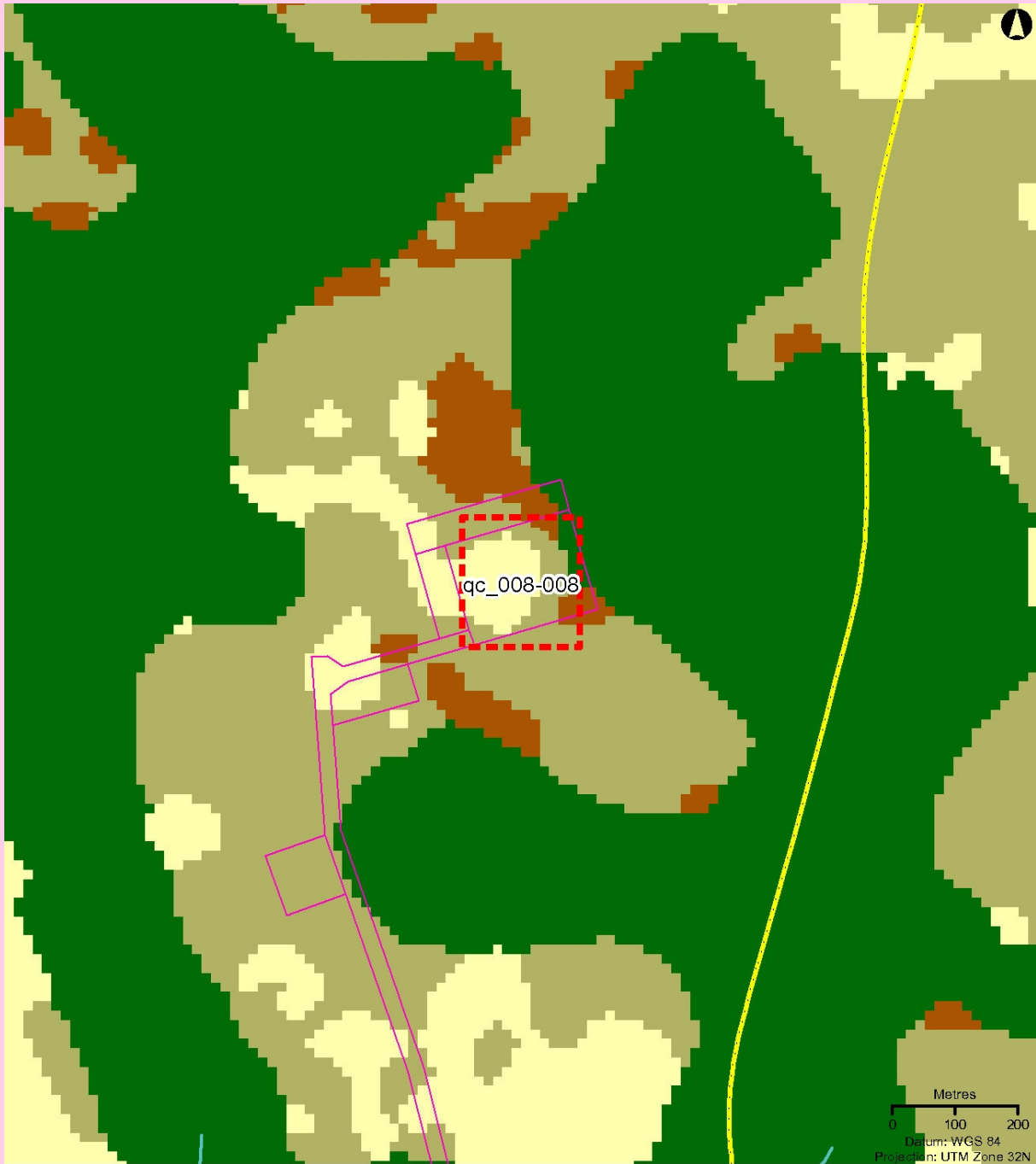
Water samples

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

Metres
0 7 14

Datum: WGS 84
Projection: UTM Zone 32N

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Oil Facilities

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

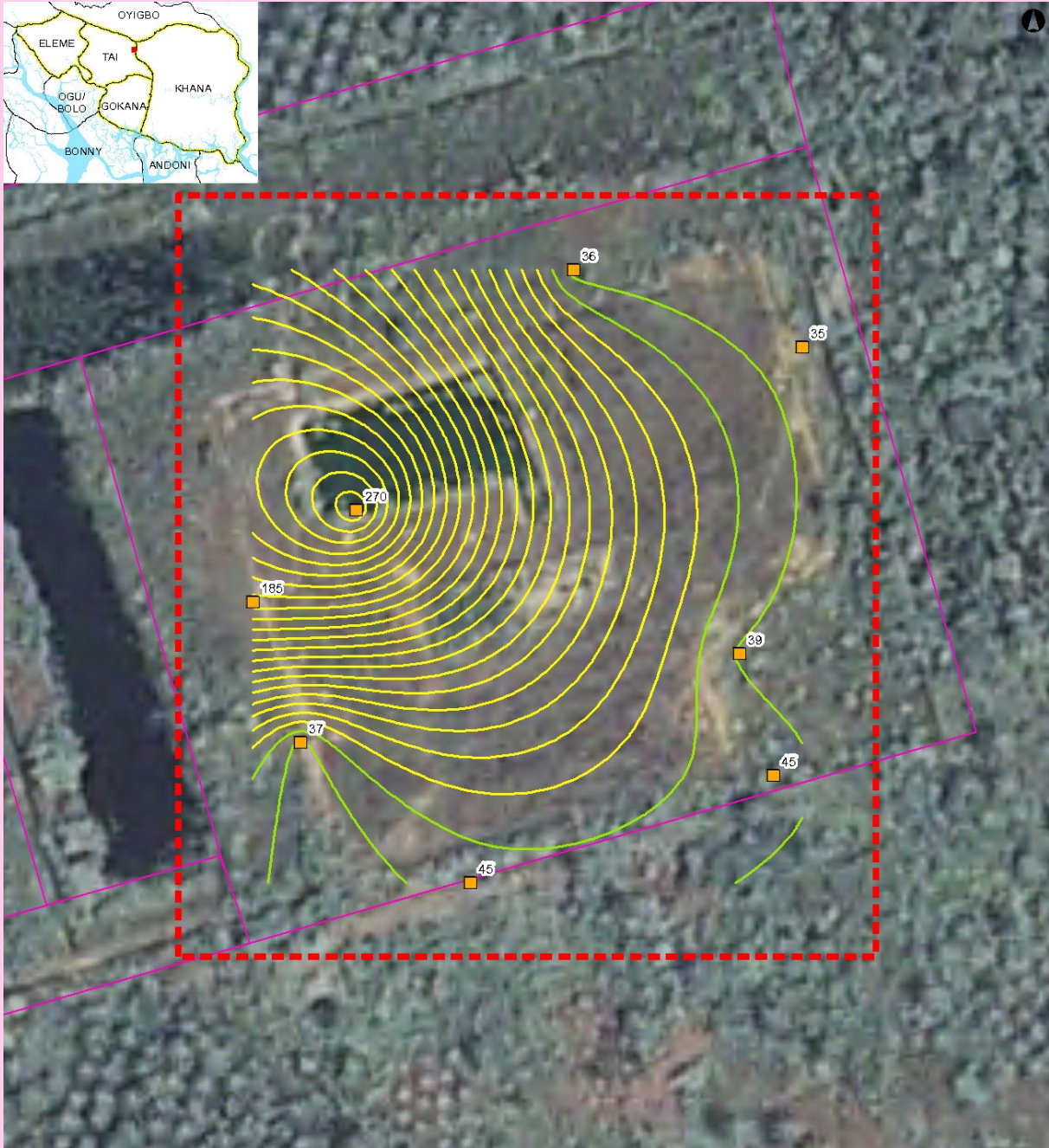
— Approximate site investigation area (that area does not correspond to contamination extent).

- 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

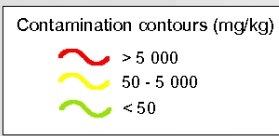
Source:
land cover 2007
from Aster imagery

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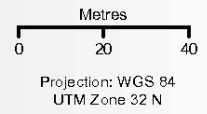
Soil Contamination Map



- 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
2361544	22.000	1.80	312380	526465
2361583	82.200	4.70	312380	526465
2361613	41.000	2.60	312380	526465
2361644	92.100	0.70	312380	526465
2361693	not analyzed for TPH	5.00	312380	526465
2361732	36.600	2.10	312397	526548
2361761	12.900	3.50	312397	526548
2361792	44.800	3.80	312397	526548
2361827	47.100	2.70	312397	526548
2361891	35.800	3.00	312389	526432
2361916	45.600	4.00	312389	526432
2361960	69.900	1.40	312389	526432
2361995	54.600	0.70	312389	526432
2362025	38.000	5.00	312389	526432
2362079	30.900	2.60	312335	526569
2362109	22.900	3.50	312335	526569
2362131	51.000	0.60	312335	526569
2362187	47.200	4.70	312335	526569
2362246	43.800	1.00	312261	526441
2362346	40.500	3.00	312261	526441
2362364	27.200	4.00	312261	526441
2362406	64.000	0.65	312248	526479
2362429	561.000	4.00	312248	526479
2362452	21.600	5.00	312248	526479
2362561	71.700	0.50	312248	526479
2362585	59.500	0.80	312248	526479
2362608	186.000	3.00	312248	526479
2362644	86.300	2.00	312248	526479
2362711	62.900	0.60	312307	526403
2362745	33.500	1.20	312307	526403
2362777	45.100	2.60	312307	526403
2362882	43.600	4.00	312307	526403
2362914	41.200	5.00	312307	526403
2362954	35.100	2.00	312261	526441
2362961	48.600	0.60	312261	526441
2362983	245.000	0.40	312276	526504
2363001	32.700	0.80	312276	526504
2363021	40.500	1.70	312276	526504
2363186	567.000	4.00	312276	526504
2363196	194.000	5.00	312276	526504

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2363211	34.400	2.00	312389	526432
2363227	31.900	4.00	312380	526465
2363261	45.900	0.30	312380	526465
2363297	55.200	0.30	312397	526548
2363366	not analyzed for TPH	2.20	312380	526465

Groundwater sample list

Sample Identifier	Total petroleum hydrocarbon (µg/l)	Easting	Northing
2697511	BDL	312398	526555
2697512	BDL	312309	526476
2697514	BDL	312326	526530
2697515	BDL	312335	526454

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