UNEP

Environmental Assessment of Ogoniland
Site Specific Fact Sheets

SIVIBIRAGBARA- BODO

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.

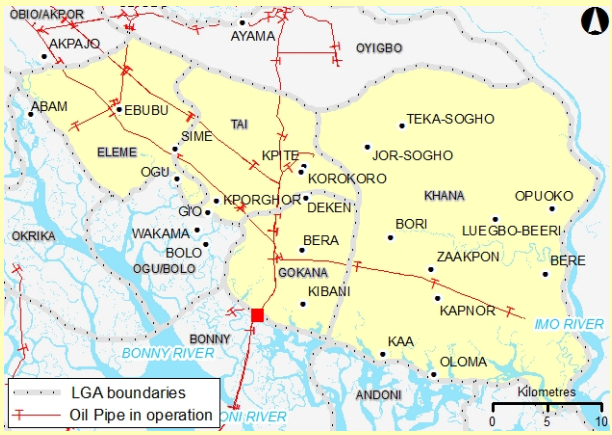
July 2011

Site fact sheet

See Guide to content and terminology on last page.

I - Site Description

Site Name	SIVIBIRAGBARA- BODO
Site Number	qc_019-045
LGA	BONNY
Main community	SIVIBIRAGBARA BODO
Surrounding communities	KEGBARA KPOR SIVIBIRAGBARA SIVIBIRAGBARA BODO
Investigated area (ha)	1.71
Category	SPDC Pipeline ROW
Eastings (WGS 84, Zone 32N)	307327
Northings (WGS 84, Zone 32N)	509755



Recommendations for risk reduction	- 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. - 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.

II - Oilfield Infrastructure Type

Wells	No
Flowstations	No
Manifolds	No
Flaresites	No
Oil pipeline in operation	24" BOMU TO BONNY TRUNKLINE 28" BOMU TO BONNY TRUNKLINE 6" BODB WEST F/S TO PATRICK WATER(DISUED)
NNPC crude line	24" NNPC BONNY - P.H. REFINERY TRUNKLINE
NNPC product line	No

III - Spill History

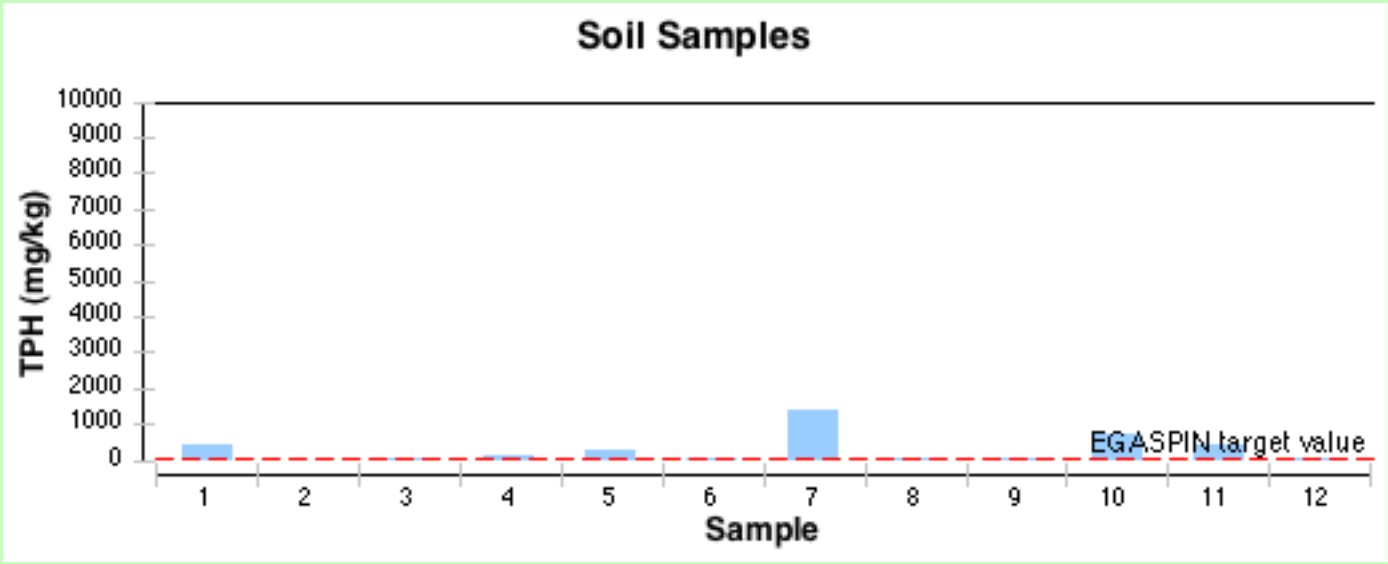
Spills reported by SPDC	No
Spill reported by community	Yes

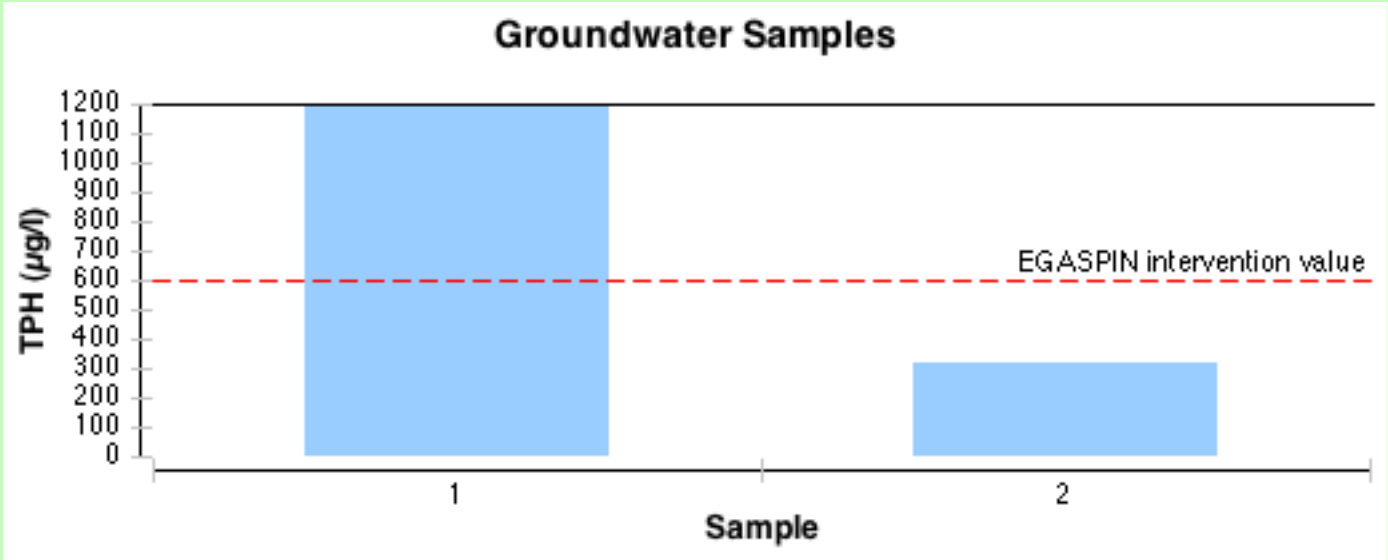
IV - Data Screening

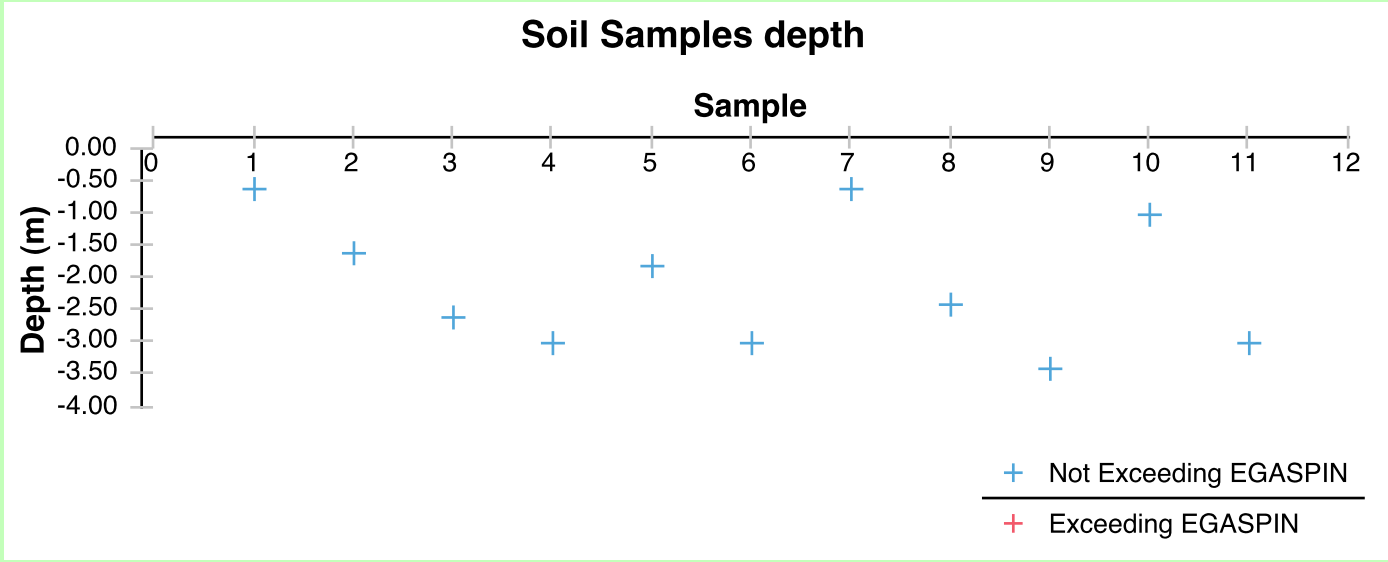
Assessment criteria

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	12
Deepest investigation (m)	3.4
Maximum soil TPH (mg/kg)	1,400.000
Number of soil measurements greater than EGASPIN intervention value	0
Deepest sample greater than EGASPIN (m)	0
Number of soil measurements below 1m	9
Number of soil measurements below 1m greater than EGASPIN intervention value	0
Number of ground water samples	3
Maximum groundwater TPH (µg/l)	277,000
Number of groundwater measurements greater than EGASPIN intervention value	1
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
TPH (mg/kg)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
EGASPIN target value
1
2
3
4
5
6
7
8
9
10
11
12
Sample

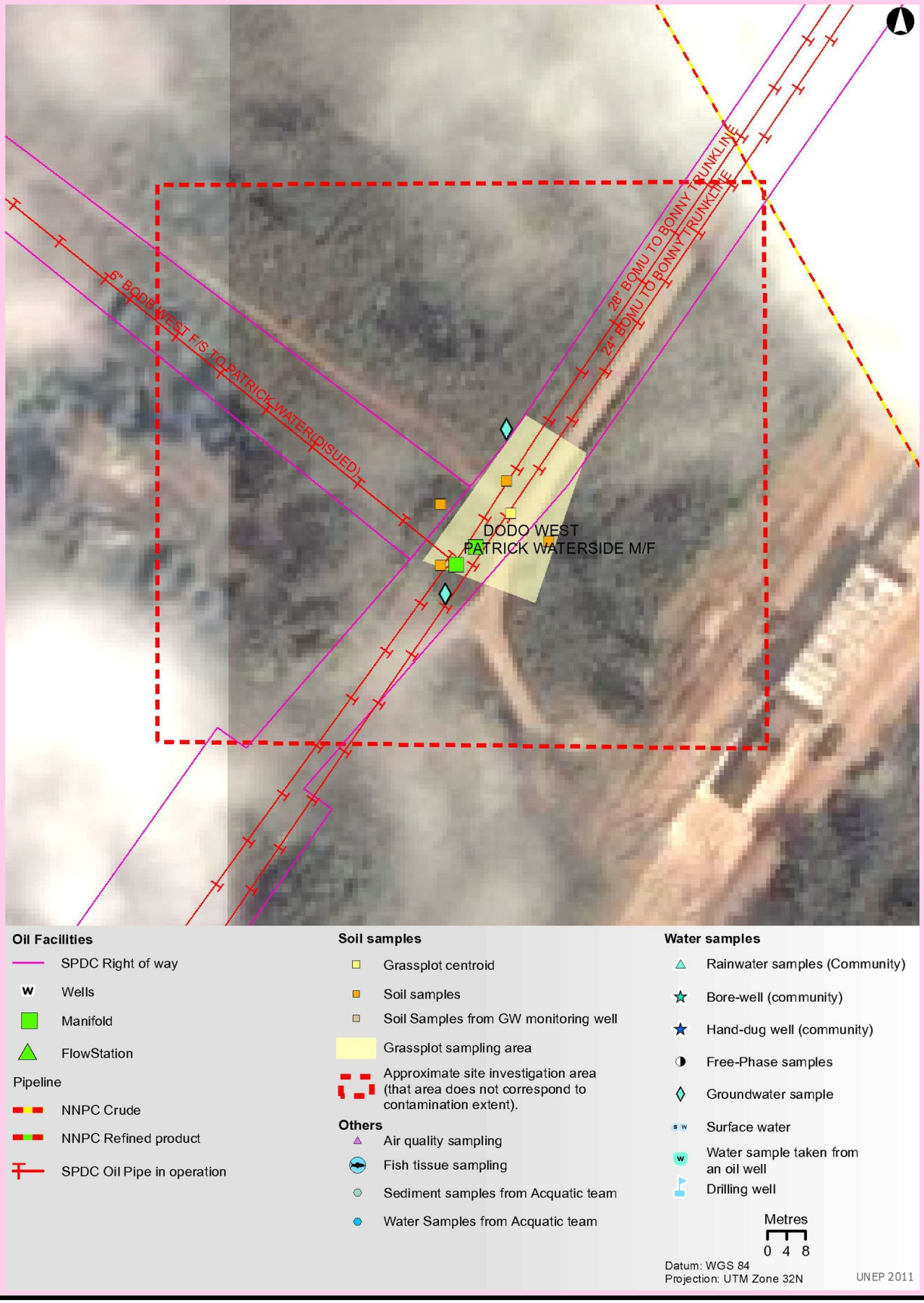

Groundwater Samples
TPH (µg/l)
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
EGASPIN intervention value
1
2
Sample


Soil Samples depth
Sample
Depth (m)
0.00
-0.50
-1.00
-1.50
-2.00
-2.50
-3.00
-3.50
-4.00
0
1
2
3
4
5
6
7
8
9
10
11
12
Not Exceeding EGASPIN
Exceeding EGASPIN

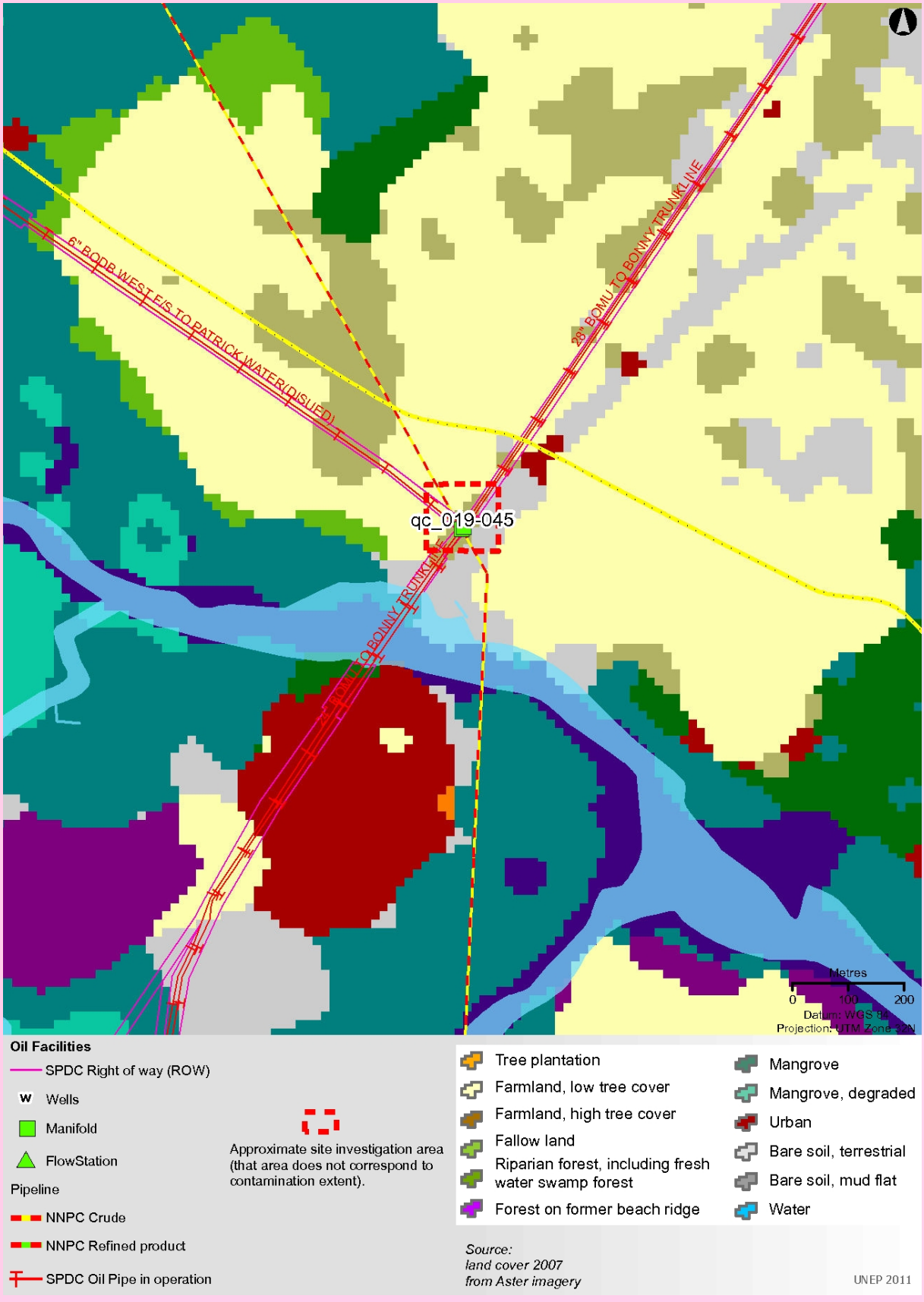
V - Maps

Satellite image of the site

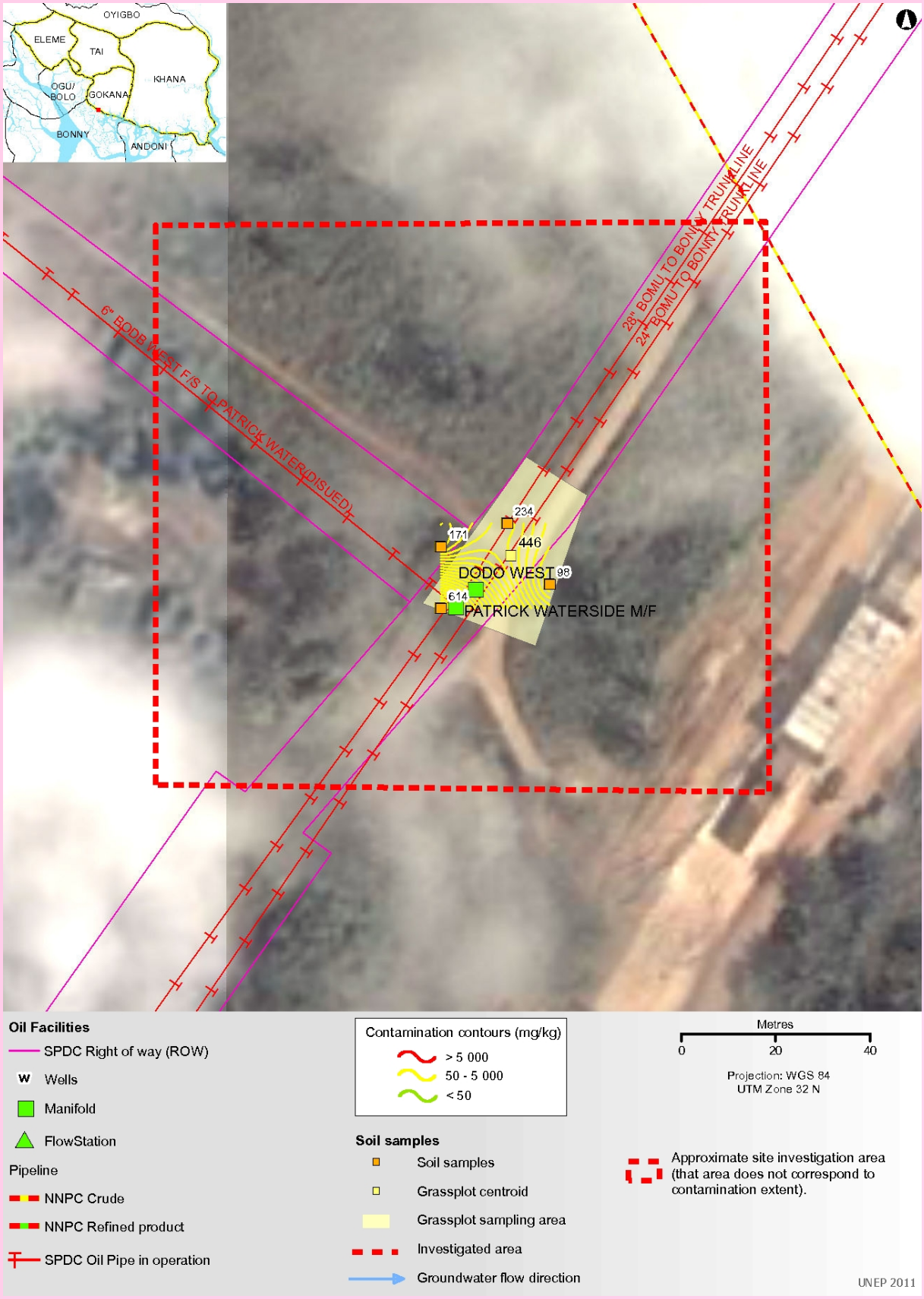
Sampling location map



Landcover 2007



Soil Contamination Map



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

VI - Photos

Ground photograph

VII - Sample List

Soil sample list

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2157857	393.000	1.00	307322	509746
2157920	6.720	0.60	307345	509738
2158027	89.400	1.80	307322	509733
2158055	694.000	3.40	307336	509751
2158171	59.800	3.00	307322	509746
2158190	275.000	3.00	307345	509738
2158250	32.900	2.40	307336	509751
2158271	72.900	0.60	307336	509751
2158328	446.000	-	307337	509744
2158343	25.100	1.60	307345	509738
2158378	1,400.000	3.00	307322	509733
2158397	155.000	2.60	307345	509738

Groundwater sample list

Sample Identifier	Total petroleum hydrocarbon (µg/l)	Easting	Northing
2750833	311	307336	509762
2750926	277,000	307323	509727
2750953	not analyzed for TPH	307323	509727

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 excedences 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