The 2010 Haiti and Chile Earthquakes: Lessons and Issues for Tajikistan

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The Impact

Haiti

- "7" magnitude
- 230,000 deaths
- 700,000 displaced in PaP; 500,000 displaced outside
- +200,000 buildings affected
- Loss of 30-40% GoH senior civil servants; senior UN staff
- Loss of government and humanitarian infrastructure
- Issues of security
- Urban/food issue

Chile

- "8.8" magnitude
- 807 dead/missing
- 2 million affected
- +160,000 houses no longer usable
- No significant loss of governance capacity
- Issues of security
- Urban/food issue

CHILE EARTHQUAKE DAMAGE - Reference Map

OCHA

LOCATIONS EXPOSED TO SHAKING

- Very strong to severe shaking
- Moderate to strong shaking
- Light to mild shaking

Town	Population	Town	Population
Talcahuano	253,000	San Javier	22,000
Arauco	25,000	Lautaro	22,000
Lota	50,000	Graneros	23,000
Chiguayante	83,000	Villa Alemana	97,000
Canete	20,000	Penaflor	66,000
San Antonio	86,000	Quilpue	130,000
La Laja	17,000	Traiguen	14,000
Yumbel	11,000	Machali	28,000
Melipilla	63,000	Limache	36,000
Cabrero	18,000	Collipulli	16,000
Bulnes	13,000	Vilcun	9,000
Talca	197,000	vina causino	510,000
Santa Cruz	33,000	Villarrica	32,000
El Monte	23,000	Buin	55,000
Lebu	22,000	Pitrufquen	14,000
Chillan	150,000	Freire	8,000
Parral	27,000	Quillota	68,000
Los Angeles	125,000	San Felipe	59,000
Talagante	52,000	Carahue	12,000
San Carlos	32,000	Victoria	25,000
Curanilahue	31,000	Nueva Imperial	19,000
Tome	47,000	Santiago	4,837,000
Lampa	29,000	Temuco	238,000
Coronel	93,000	Vina del Mar	295,000
Constitucion	38,000	La Ligua	25,000
Concepcion	215,000	Valparaiso	282,000
Penco	46,000	Los Andes	57,000
Longavi	6,000	Loncoche	16,000
San Vicente	23,000	Las Gaviotas	2,000
Linares	70,000	Panguipulli	16,000
San Clemente	14,000	Salamanca	13,000
Colhueco	7,000	Las Animas	30,000
Teno	7,000	Corral	4,000
Molina	29,000	Valdivia	133,000
Paine	33,000	Illapel	23,000
Curico	102,000	La Union	26,000
Cauquenes	31,000	Rio Bueno	15,000
Mulchen	22,000	Mendoza	877,000
San Bernardo	250,000	Osorno	136,000
Nacimiento	21,000	San Martl	83,000
Chimbarongo	17,000	San Rafael	109,000
Angol	45,000	San Juan	447,000
Hacienda La Calera	49,000	Cutral-Co	47,000
Rancagua	213,000	San Luis	184,000
Llallay	17,000	Neuquen	242,000
Rengo	38,000	General Roca	73,000

Elevation (meters)

- 5,000 and above
- 4,000 - 5,000
- 3,000 - 4,000
- 2,500 - 3,000
- 2,000 - 2,500
- 1,500 - 2,000
- 1,000 - 1,500
- 800 - 1,000
- 600 - 800
- 400 - 600
- 200 - 400
- 0 - 200
- Below sea level

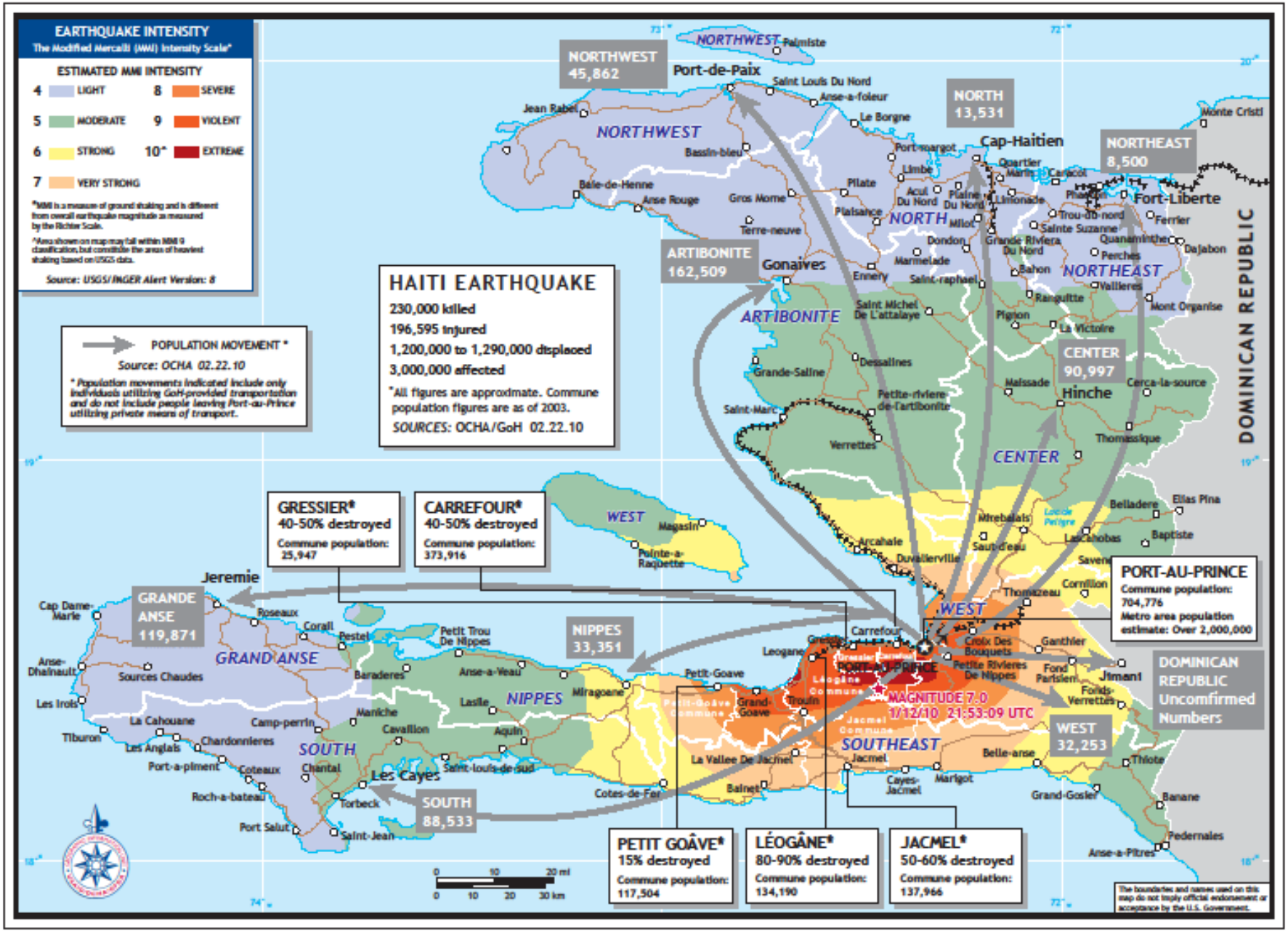
Legend

- National capital
- First admin. level capital
- Populated place
- International boundary
- First admin. level boundary
- Roads

Map data source(s): UN Cartographic Section, ESRI, Europa Technologies, FAO and CGIAR.

Chile exposed population data source: USGS

EARTHQUAKE-AFFECTED AREAS AND POPULATION MOVEMENT IN HAITI



DAMAGE ASSESSMENT FOR MAJOR BUILDINGS / INFRASTRUCTURE IN PORT-AU-PRINCE, HAITI

Operational Analysis with GeoEYE-1 Data Acquired 13 January 2010 and QuickBird data aquired 4 March 2008

Damage sites identified by name & type, including hospitals, government & UN offices, schools, churches & industrial facilities

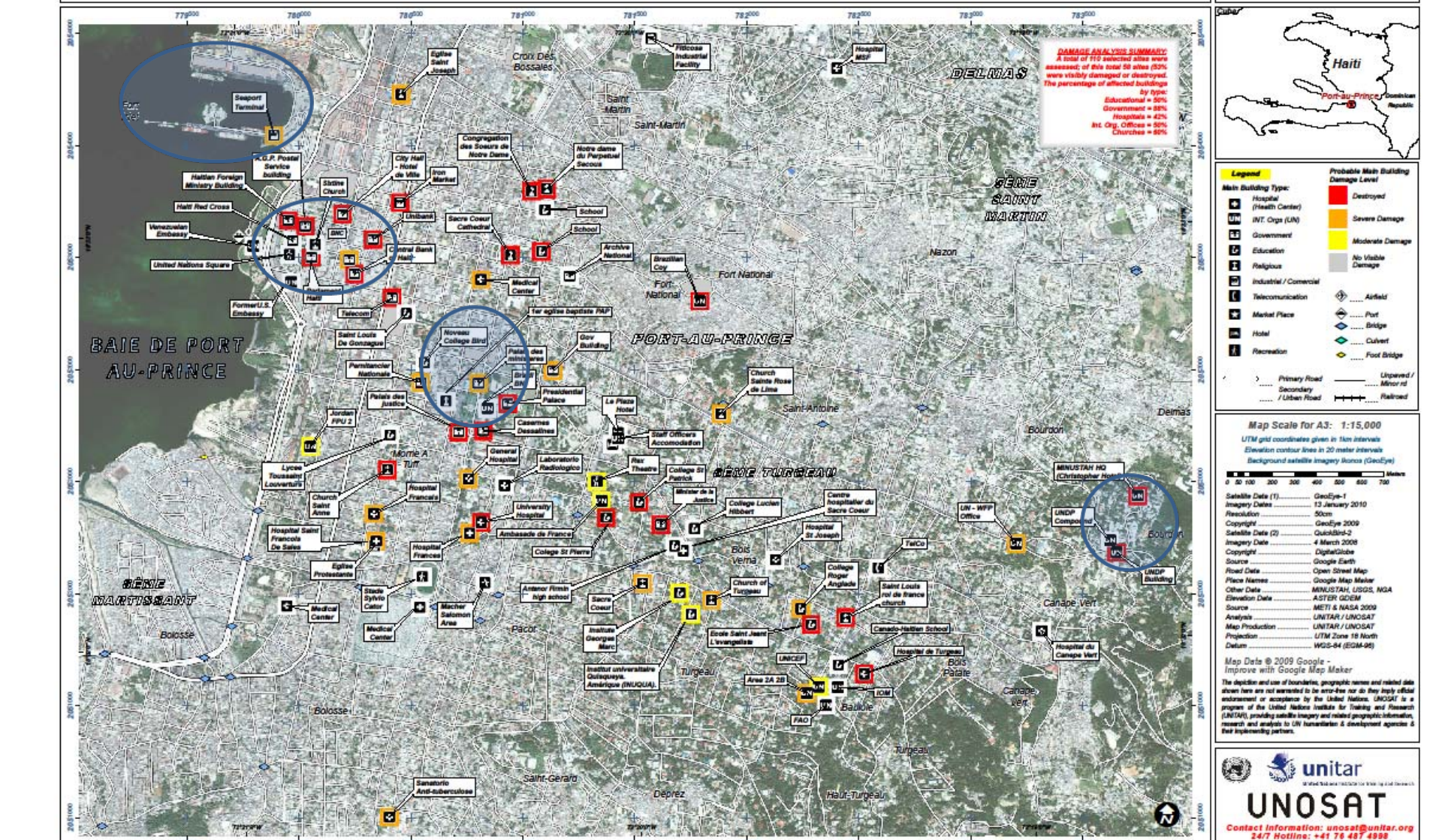
A preselected list of major buildings and urban facilities were assessed for damages using GeoEye-1 satellite imagery recorded on 13 January 2010. Building sites have been identified by local name and classified by type when possible, with a focus on hospitals, government and UN offices, schools, churches and industrial complexes. Damage classes have been assigned based on visual interpretation of available satellite imagery and thus contain an associated level of uncertainty for buildings with less severe forms of damages. Sites marked as "No Visual Damage" may have major structural damages not identifiable in the imagery, thus damages in the analysis have likely been underestimated. Note also that the major sites evaluated are not exhaustive of all important buildings within the city. This is a preliminary analysis & has not yet been validated in the field. Please send ground feedback to UNITAR / UNOSAT.

Earthquake 7.0M

16 January 2010 (19:00:00 UTC)

Version 1.0

Glide No: EQ-2010-000009-HTI



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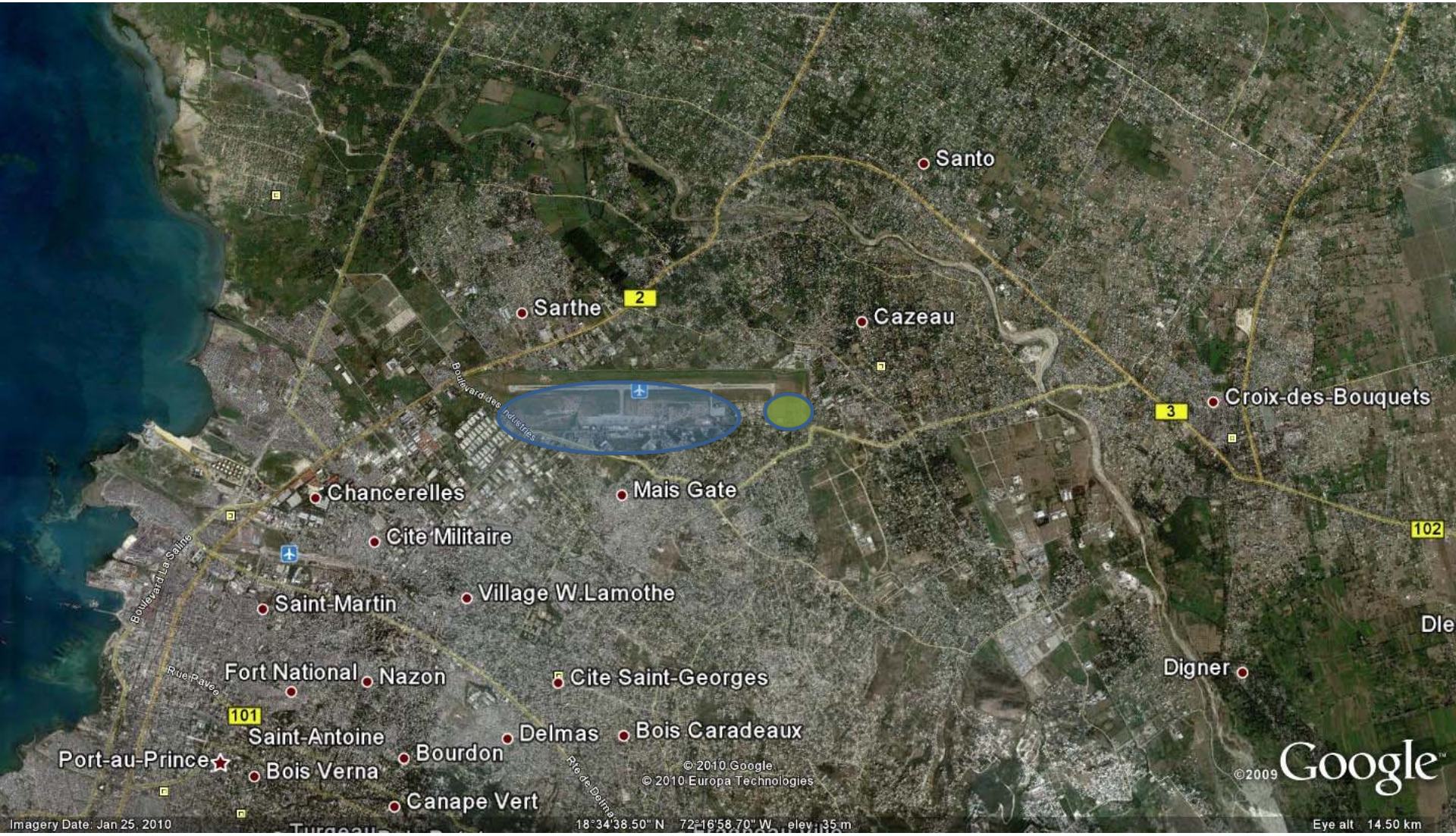
Santo
Sarthe
2
Cazeau
Croix-des-Bouquets
3
Boulevard des Industries
Chancerelles
Mais Gate
Cite Militaire
102
Boulevard La Saline
Saint-Martin
Village W.Lamothe
Dle
Fort National
Nazon
Cite Saint-Georges
Digner
Rue Pavee
101
Saint-Antoine
Delmas
Bois Caradeaux
Port-au-Prince
Bourdon
Bois Verna
Rte de Delmas
Canape Vert
© 2010 Google
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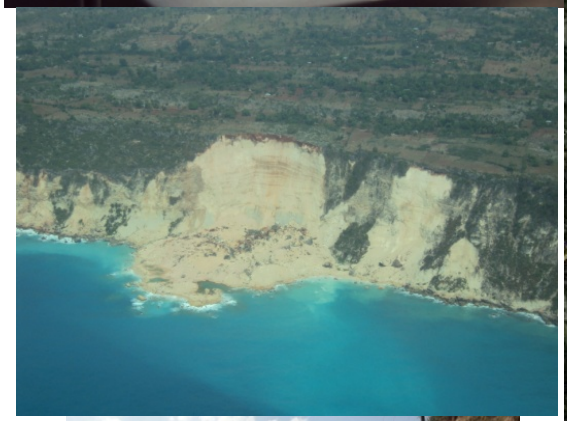
©2009 Google
Imagery Date: Jan 25, 2010
18°34'38.50" N 72°16'58.70" W elev 35 m
Eye alt 14.50 km

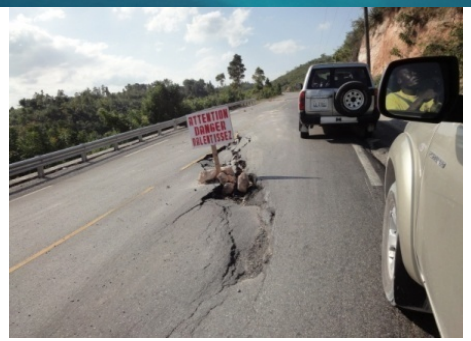

“Log Base”
© 2010 Google
©2009 Google
Imagery Date: Jan 25, 2010
18°34'42.02" N 72°16'29.61" W elev 41 m
Eye alt 616 m

A new meaning for “One UN”

Geophysical Impacts

Likely increased landslides, flooding, sedimentation for years to come.



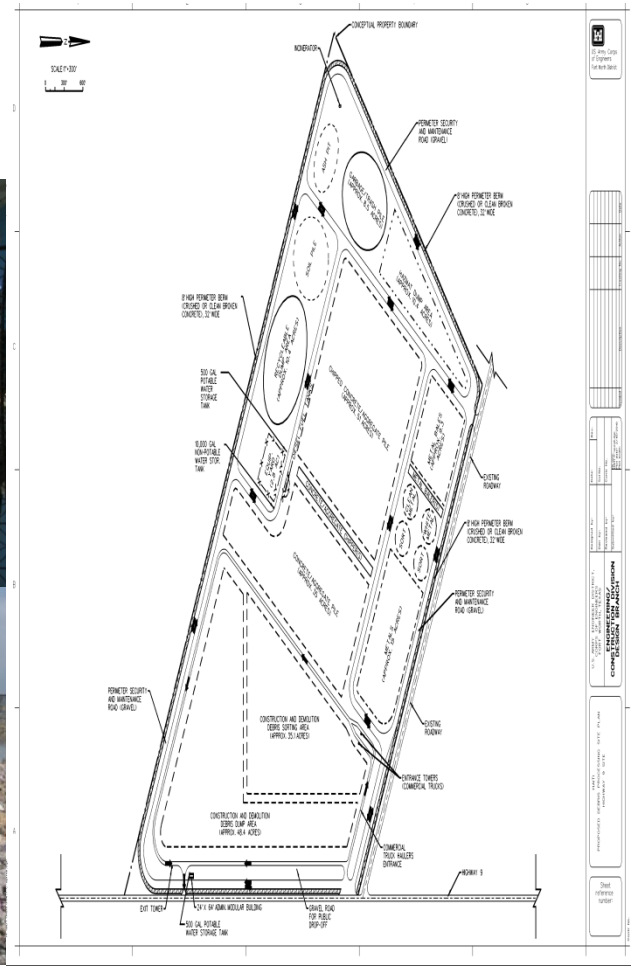


Haiti – The deceased

Managing the deceased: mass graves and ad hoc disposal

Need to plan for mass burials

Debris: 20-70 Million M3



Need to plan for the disposal of quite large volumes of debris. Until the debris is removed, reconstruction cannot start.

Sanitation:
Close to a million people without toilets

Alternative systems needed to collect and dispose of thousands of liters of sewage every day.

Camps and Shelter: Too crowded and not enough








Adequate emergency and transitional shelter are immediate needs; <u>and need to be planned in advance.</u>

Environmental Impacts

- Increased tree-cutting
- Improper disposal of sewage and debris
- Improper land use
- Locating camps in dangerous/unsafe locations
- Changing livelihoods/changing environmental impacts.

Lesson: Environment core to recovery, building back better and do not harm

Questions?

Thanks to Haiti REA Team for their help in the assessment and pictures.

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