



MEMORANDUM

TO Rick Schryer - Fortune Minerals Limited

DATE 27 February 2012

CC Jen Gibson

FROM John Virgl, Damian Panayi, Cam Stevens

PROJECT No. 09-1373-1004.9600

**UNDERTAKING #4 – REVISED
WOODLAND CARIBOU DISTURBANCE FOOTPRINTS + 500 M BUFFER**

During Day 1 of the Technical Sessions for the NICO Project, the Mackenzie Valley Environmental Impact Review Board and Environment Canada asked Fortune Minerals Limited (Fortune) to provide:

- 1) area estimates of development footprints with 500 metre buffers describing the NICO Project and related infrastructure, for example, the existing Tłıchq Winter Road, the proposed Tłıchq Road, and the proposed NICO Project (including the NICO Project Access Road (NPAR); and
- 2) a map(s) showing the above mentioned development footprints relative to existing human disturbances and the assumed range of woodland caribou, specifically the NWT South herd; and
- 3) percentage of added woodland caribou habitat disturbance as a result of the NICO Project in addition to existing disturbance estimates in the NWT South range.

As described in Section 8.1.3.2 of the Developer's Assessment Report (DAR), the regional study area (RSA) was assumed to be within the predicted range identified for the NWT North Slave woodland caribou population (ENR 2009). However, John Mantla (Behchokò, 2003, pers comm.), Pierre Beaverho (Whati, 2011, pers comm.), Jimmy Nitsiza (Whati, 2011, pers comm.), and Jimmy B. Rabesca (Whati, 2011, pers comm.) indicated that they knew of no traditional hunting of woodland caribou in the area, and believed that they were not commonly present in the study area. Traditional and local knowledge indicates that woodland caribou tend to be more common to the west of the RSA, beyond the community of Whati (Dogrib Treaty 11 Council 2001).

Radio-collar data of woodland caribou in the NWT (Nagy et al. 2011) supports traditional and local knowledge. For woodland caribou herds where the core ranges have been identified, most of the spatial boundaries of their distributions are west of the RSA (Figure 1). Nagy et al. (2011) showed that boreal caribou form 2 sub-populations of females organized as individuals across ranges separated by large areas burned by wildfires in the central NWT. This habitat discontinuity may be temporary if natural habitat regeneration occurs. Results from Nagy et al. (2011) are consistent with the observation of Bergerud (1996) that boreal caribou tend to form a near-continuum across a region of favourable calving sites, which are represented by very late seral-stage vegetation communities such as black spruce and bog-fen complexes.

It is important to note that the mean annual home ranges for boreal caribou herds in NWT are 6 to 14 times larger than the smallest mean annual ranges, and up to 2-times larger than the largest mean annual ranges reported in Alberta (Stuart-Smith et al. 1997) and Saskatchewan (Rettie and Messier 2001). In the NWT much of the northern portion of the boreal caribou range, which is where the NICO Project is located, is comparatively undeveloped and continuous (Figure 1); thus their movements may not be constrained by human development, possibly leading to larger home ranges (Nagy et al. 2011).



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The NICO Project footprint area (plus 500 metre [m] buffer), which includes the anticipated mine site and the NPAR is about 4225 hectares (ha) (Table 1; Figure 2). Only the south western portion of the NPAR intersects with the assumed range of the NWT South herd (Figure 1), which is an area of 24 398 790 ha (243 988 square kilometres). The disturbance cover from the Project to be added to this range is about 0.02% (if we conservatively assume that the entire NICO Mine Footprint and NPAR intersect with the range of the NWT South herd). Note that the total amount of existing disturbance (fire and human-related, but mostly fire) within the range is about 38% according to Environment Canada's database (EC 2011).

The winter road-spur to the NICO exploration site (when in operation) from the Tłı̄ch̄ Winter Road is about 990 ha. The existing Tłı̄ch̄ Winter Road has a footprint area of 20 600 ha (Table 1; Figure 2). For comparison, the proposed Tłı̄ch̄ Road is anticipated to have a footprint area of 23 260 (about 0.1% of the NWT South herd range assuming that the entire road is within the South range). It is predicted that with the application of the NICO Mine Footprint and the NPAR, and the proposed Tłı̄ch̄ Road, the total amount of disturbance within the NWT South herd range will likely remain near 38%. Figures 1 and 2 illustrate the geographic locations of the proposed NICO Project and these other developments relative to the predicted range of woodland caribou in the NWT.

Table 1: Summary of Development Areas (plus 500 m buffers) that Influence or may be Influenced by the Proposed NICO Project (also see Figure 2)

Buffer Description	Area (ha)
NICO Mine Footprint Area (without airstrip)	1,276
NICO NPAR (10 m ROW)	3,029
NICO Mine Footprint Area (without airstrip) + NPAR 10 m ROW	4,225
Existing Winter Road to NICO exploration site (25 m ROW)	990
Proposed Tłı̄ch̄ Road (25 m ROW)	23,260
Existing Tłı̄ch̄ Winter Road (25 m ROW)	20,600
Whati to Existing Tłı̄ch̄ Winter Road (25 m ROW)	4,009
Whati to Proposed Tłı̄ch̄ Road (25 m ROW)	1,441

NPAR = NICO Project Access Road; ROW = Right of way (or width of road); m= metres; ha = hectares

References

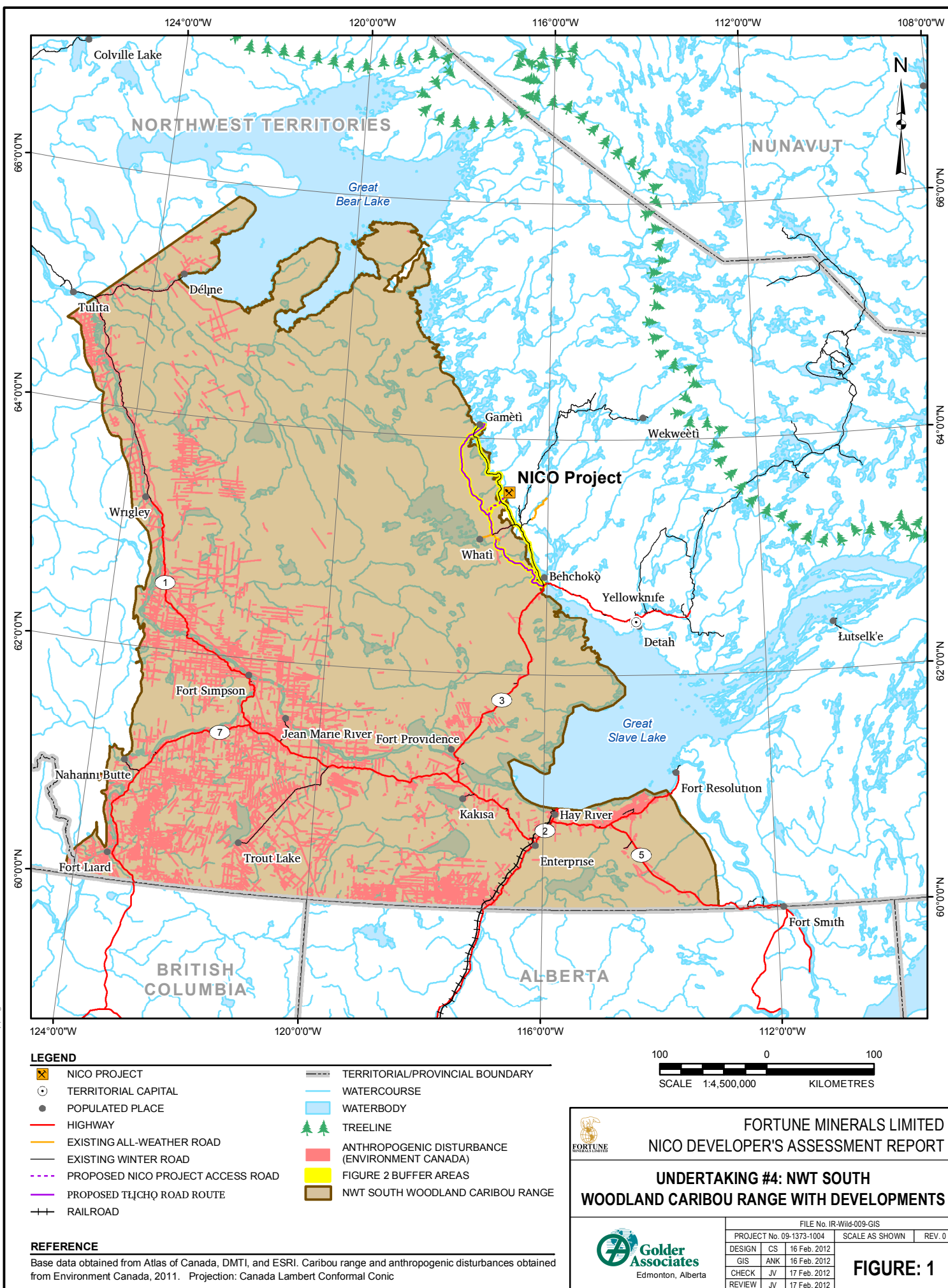
- Bergerud, A.T. 1996. Evolving perspectives on caribou population dynamics, have we got it right yet. *Rangifer* Special Issue 9:95-116.
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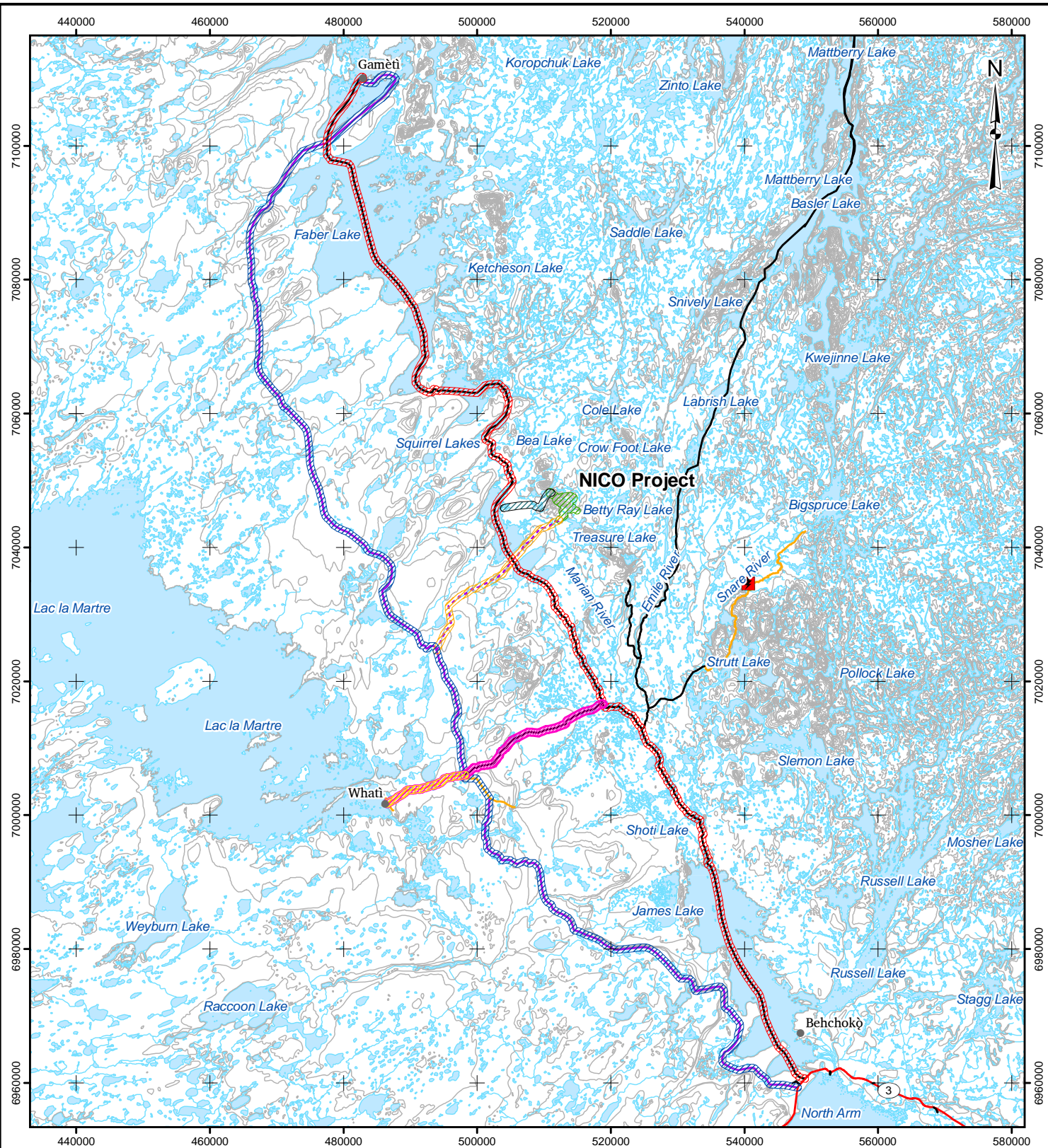


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- Rettie, W.I., and F. Messier. 2001. Range use and movement rates of woodland caribou in Saskatchewan. *Canadian Journal of Zoology* 79:1933-1940.
- Stuart-Smith, A. K., C.J.A. Bradshaw, S. Boutin, D.M. Hebert, and A.B. Rippin. 1997. Woodland caribou relative to landscape patterns in northeastern Alberta. *Journal of Wildlife Management* 61:622-633.

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LEGEND

- POPULATED PLACE
- SNARE HYDRO LOCATION
- CONTOUR (20 METRE INTERVAL)
- HIGHWAY
- EXISTING ALL-WEATHER ROAD
- EXISTING WINTER ROAD
- PROPOSED NICO PROJECT ACCESS ROAD
- PROPOSED Tłı̨chǫ ROAD ROUTE
- WATERCOURSE
- WATERBODY
- NICO FOOTPRINT AREA + 500M BUFFER
- EXISTING Tłı̨chǫ WINTER ROAD 25M ROW + 500M BUFFER
- NICO PROPOSED ACCESS ROAD 10M ROW + 500M BUFFER
- PROPOSED Tłı̨chǫ ROAD 25M ROW + 500M BUFFER
- WINTER ROAD TO NICO PROJECT IN RSA 25M ROW + 500M BUFFER
- WHATI TO PROPOSED Tłı̨chǫ ROAD 25M ROW + 500M BUFFER
- WHATI TO EXISTING Tłı̨chǫ WINTER ROAD 25M ROW + 500M BUFFER

REFERENCE

Base data obtained from Atlas of Canada, DMTI, and GeoGratis.
Projection: UTM Zone 11 Datum: NAD 83

20 0 20
SCALE 1:800,000 KILOMETRES



FORTUNE MINERALS LIMITED
NICO DEVELOPER'S ASSESSMENT REPORT

TITLE

**UNDERTAKING #4: ROADS AND
NICO MINE, WITH 500 METRE BUFFERS**



FILE No. IR-Wild-008-GIS			
PROJECT No. 09-1373-1004		SCALE AS SHOWN	
DESIGN	CW	17 Feb. 2012	REV. 0
GIS	AJW	17 Feb. 2012	
CHECK	JV	17 Feb. 2012	
REVIEW	JV	17 Feb. 2012	

FIGURE: 2