

The features of promising potential sites for PSPP

Site Name		JN 1	
Location (Name of River)		Upper dam/reservoir : Son La Province / Moc Chau District / Suoi Bang Commune (None) Lower dam/reservoir : Son La Province /Moc Chau District / Suoi Bang Commune (Lai River)	
Project Parameter	Installed Capacity P(MW)	1,000	
	Design Discharge Qd(m ³ /s)	190	
	Effective Head He(m)	660	
	Peak Duration Time T(hrs)	7	
Topography and Geology	(Overall geological condition)	<ul style="list-style-type: none"> - The surveyed area is regionally around the center of the NNW-SSE systems of folded range group, which continued from the northwestern continental sedimentary rocks of Proterozoic-Paleozoic. - Da River fault as a noticeable tectonic line extends in NW-SE direction and passes the relatively near point as 20km of the surveyed area. - Sedimentary rocks as dominantly limestones and rarely shale occupy the surveyed area in this region. There are many of the special topography by eroded out of the less resistant limestone such as steep valleys or remaining isolated hills. 	
	(Upper dam/reservoir)	<ul style="list-style-type: none"> - Around the upper dam site and the reservoir are occupied by mainly Devonian limestones (D2mt and D2ebn), Carboniferous limestone (C1-2) in western slope of the reservoir and Silurian shale containing limestone in eastern slope. These beds strike N40W and dips high angle or nearly vertical. - An approach road which is un-paved is three meters wide and only one traffic lane from Ban Men to Nuoi Nau. And it is necessary to construct a new approach road about 6km from Noui Nau to the site. - Since the planned reservoir is surrounded by limestone mountains and there is no river flow, water proofing is required. - Since small valleys are well developed and have steep slants of 30-45 degrees and many boulder stones and rock outcrops were seen, it is difficult for fairing excavation and a volume of landfill at a bottom area is considerably required. Then concrete facing type is applicable for the water proofing of the slant of reservoir. - A thin ridge of 20 m exists in the northern part of the reservoir. 	
	(Waterway • Power Station)	<ul style="list-style-type: none"> - Almost all rock is limestones in containing some thin bed of shale, and dips of these limestones will be nearly vertical whole in the tunnel. - Although the access tunnel to the underground power station and the tailrace can be approached from a planned lower dam site, it is difficult to construct the access roads to the headrace and the penstock due to the complicated topographical conditions. - Since the base rock of a proposed site is composed of limestone, there will be some risk of encountering sudden sump waters. 	

	(Lower dam/reservoir)	<ul style="list-style-type: none"> - In the left side of the lower reservoir is Triassic relatively shale dominant limestone (T3n-rsb1), and right side is Carboniferous limestone (C1-2) on the slope. Both of them have around 1m thick of orange colored weathered soil on the surface in steep slope. - Limestones crop out on the slope between the upper reservoir and the lower reservoir. No seepages are found on the slope. The flow rate of the water in the river and streams are quite a little. The ground water level seems to be lower than the lower reservoir. - The lower dam site can be accessed by a vehicle through Route 6 & 37 which distance is about 45 km from Moc Chau and through an un-paved road about 20km from Ban Men. - The ridge of the left bank of the planned lower dam site is thin and has a gentle slope. The ridge of right-bank has a sufficient width and a slant slope. Therefore, concrete gravity dam is suitable and groundwater level and a permeability of the left bank ridge need to be checked. - A length of dam crest will be about 400 m (the dam height of 100 m (EL.320 m)). - Catchment Area is as small as 20 km², and water flow of the river that is 10 meters width is less than 0.1m³/s.
Natural and Social Environment	Natural Park / Protected Area	The project site and its surrounding areas are not in any existing or proposed protected area.
	Prosperous fauna / flora	The forest around the upper dam site is secondary and watershed forest. It is a local protected area, "Suoi Bang forest". There are some important plant species and large mammals in the area.
	Minority	There are Thai and Muong ethnic groups, and it is expected that they will receive negative impacts.
	Resettlement / Compensatory assets	At least 10 households need to be resettled from the lower dam site. Compensation for agricultural land and houses will occur.
	Historical / Cultural Heritage	There is no historical / cultural site in and around the project site.
	Road / Traffic condition	There is a good road to the lower dam site. It is necessary to construct a new one to the upper dam site.
Others' Special Note		The site is situated about 50 km to Hoa Binh sub-station (500 kV).
Estimated Economic Value		910 mln US\$ (B/C=0.93)

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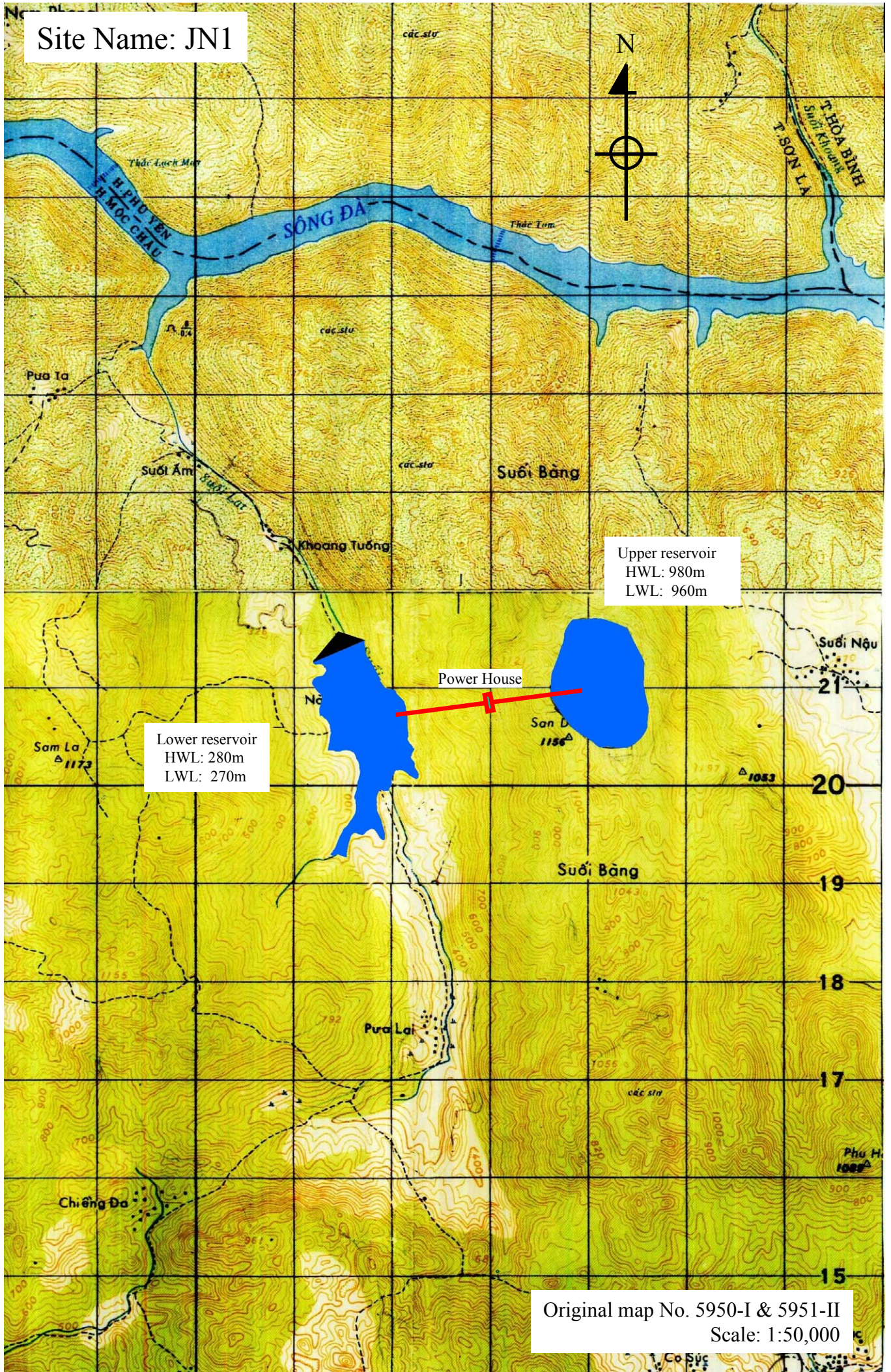




Photo 1

The reservoir has steep slants of 30-45 degrees.
(View from the north of the reservoir)



Photo 2

Many boulder stones and rock outcrops were seen around the north of the reservoir.



Photo 3

A thin ridge of 20 m exists in the northern part of the reservoir.



Photo 4

The ridge of the left bank of the planned lower dam site is thin and has a gentle slope.
(View from the upstream)



Photo 5

The ridge of right-bank has a sufficient width and a slant slope.
(View from the upstream)



Photo 6

Water flow of the river that is 10 meters width is less than $0.1\text{m}^3/\text{s}$.



Photo 7

Proposed upper reservoir.

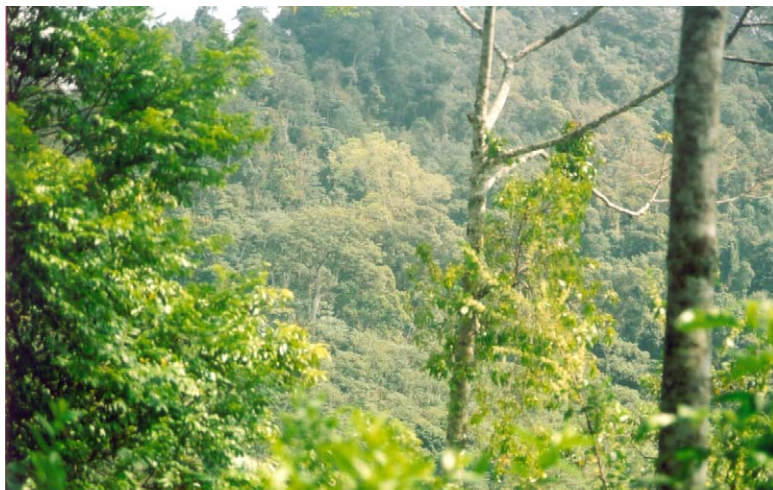


Photo 8

The forest of the planned upper reservoir is managed and used by the local people.



Photo 9

There is Na Loi village, Suoi Bang commune, in the proposed lower reservoir.