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DIRECTORATE OF INTELLIGENCE

3 October 1986

China: Poor Outlook for the Three Gorges Project [redacted] 25X1

Summary

We believe the Three Gorges hydroelectric project is a far cry from the "sure thing" China's power ministry has tried to convince United States and other foreign parties it is. For the project to become a reality, we believe seven major obstacles must be overcome: the World Bank must endorse it, low cost financing must be secured, China's economy must improve, stronger domestic political support must be found, a strategy for meeting short term energy needs must be agreed to, better management of limited resources must be realized and a division of labor between Chinese and foreign firms must be worked out. If the Chinese Government approves the project, we believe low-cost loans, grants, and supplier credits from Japan, Canada, and elsewhere will give foreign firms the edge over the United States in bidding on the project. [redacted] 25X1

This memorandum was prepared by [redacted] Office of East Asian Analysis. 25X1
Information available as of 3 October 1986 was used in its preparation. Comments and queries are welcome and may be directed to the Chief, Economic Assessments Branch, China Division, OEA, [redacted] 25X1

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The Chinese Government has again deferred--this time until late 1987--a final decision on whether to build the giant Three Gorges project (see inset). In June, the State Council assigned responsibility for the project to two new offices and authorized still more feasibility studies, which Canada will carry out and the World Bank will supervise.[1] For a number of reasons, we doubt the project will come to fruition even if it wins State Council approval in 1987.

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Three Gorges: A Mammoth Undertaking

For over three decades, proposals to dam the Yangtze River at Three Gorges have been debated by successive Chinese leaders. If built, the dam would provide more power capacity than any other in the world--13,000 megawatts (MW), according to the Chinese press, equal to 15 percent of China's current total power capacity--within a practical distance of China's power-starved coastal industries. It would also provide flood control and improved navigation on the Yangtze River, possibly allowing oceangoing vessels to reach Chongqing. The cost would be steep--with Chinese and foreign estimates ranging from $10-16 billion, depending on height, power capacity, and lock capabilities--and construction would take anywhere from 10 to 20 years.

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Some Big Ifs

For the Three Gorges to become reality, we believe seven major obstacles must be negotiated. The fact that the project has been on the drawing broad for over 30 years testifies to the difficulty of that task.

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Favorable International Findings

To persuade the State Council that the project is a legitimate use of tight investment funds, we believe China's review groups will need a strong recommendation from the World Bank. World Bank approval, however, is not ensured. Past favorable evaluations of Three Gorges, which were done by the pro-project Ministry of Water Resources and Electric Power (MWREP), never included the Bank-style cost-benefit analysis. Also, the technical studies of various aspects of the project done by MWREP

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[1] We believe the Ministry of Water Resources and Electric Power--the leading proponent for Three Gorges--has been sidelined by the State Council decision. See appendix A for a discussion of who is calling the shots on the Three Gorges project.

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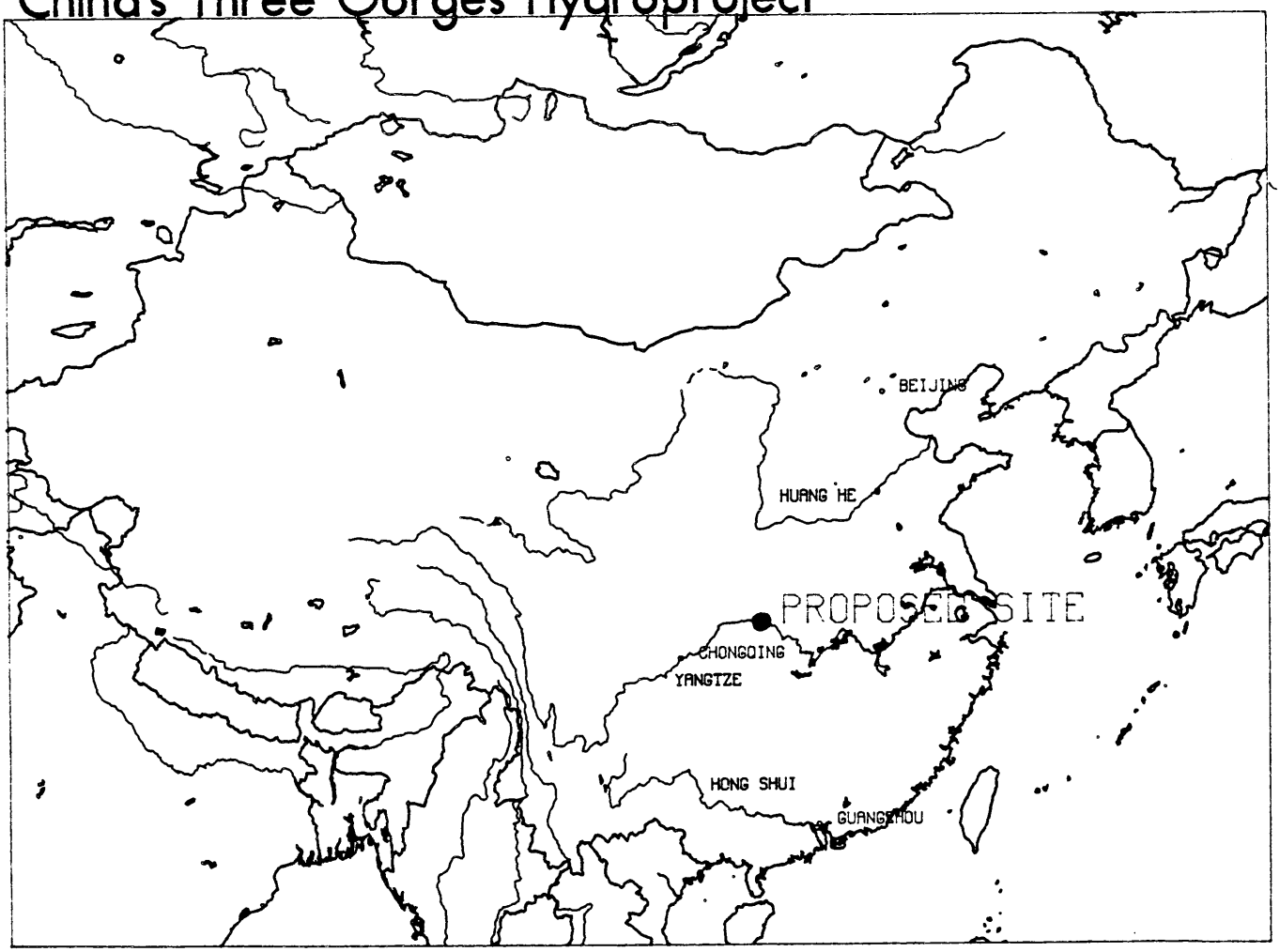
China's Three Gorges Hydroproject



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[redacted] 25X1

have used different assumptions about such factors as dam height,[2] reservoir levels, and navigation capabilities--making an assessment of the merits impossible. Nor is it clear that the Bank will recommend a single large dam as the optimum method of meeting flood control and electric power needs; MWREP itself has been debating this question for decades. [redacted] 25X1

Low-Cost Financing

[redacted] we estimate the Chinese will need 25X1
$5-8 billion in foreign exchange for the Three Gorges project. China is only interested in low-cost, concessionary loans--Vice Premier Li Peng, China's energy czar, has told US Government officials that Three Gorges would not proceed without them. We believe China cannot secure this amount without unusual cooperation from several countries and international organizations, and Beijing's best sources of low-cost financing, the World Bank and Japan's Overseas Economic Cooperation Fund (OECF), may not be able to provide much help. The World Bank has already indicated to US Embassy officials in Beijing that it would not finance Three Gorges alone. And, although Japanese press reports suggest that Tokyo is willing to devote China's next two OECF allocations (covering the 1990s) exclusively to Three Gorges, we believe China's developing industries would lobby hard against the proposal because it would cost them a major source of low-cost project financing for an entire decade. [redacted] 25X1

We think China's best hope is to press potential foreign participants, including the United States, to contribute to an international finance package that might include a partial OECF allocation, various eximbank contributions, supplier credits, and possibly loans from the World Bank. Beijing's success in assembling such a package will depend on the ability of foreign firms to agree on a division of the Three Gorges pie and to convince their governments and financial institutions to provide the financing, which we believe will be difficult. [redacted] 25X1

A Sound Economy

Because the dam provides no direct source of foreign exchange to repay project loans, the level of China's foreign exchange reserves will be a factor in Beijing's decision, even if low-cost loans are available. By our calculations, assuming a 30 year pay-back period, foreign loan repayment costs for the dam would climb gradually, to at least $500 million a year for 10 or more of these years. Moreover, we think China would have considerable difficulty financing the costs of Three Gorges not covered by foreign loans, costs we estimate at 15 to 25 billion yuan ($4-7 billion), more than China's entire hydropower budget in the last decade. China's capital construction budget is already stressed by two years of excessive growth, and other industries will

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[2] See appendix B for comparisons of the Three Gorges project with other large hydropower dams worldwide. [redacted] 25X1

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try to delay a decision on Three Gorges to preserve their share of the pie. [redacted] 25X1

A Strong Backer

Research by two leading US China scholars concludes that large projects such as Three Gorges must have strong backing from at least one top leader if they are to become a reality.[3] We believe the support of Deng Xiaoping or Zhao Ziyang is critical for Three Gorges. We suspect the project faces strong opposition from many quarters in the bureaucracy--including other energy ministries such as coal and oil, and several provincial governments--who see their shares of the state investment budget, access to foreign exchange, and power threatened. Vice Premier Li Peng seems a lukewarm supporter at best, and we do not detect any other strong support in the top leadership, perhaps because no one sees any personal gain from championing a high-risk, high-cost project that will not provide any payoff for decades. [redacted] 25X1

Urgent Power Needs

Chronic power shortages resulting from rapid industrial growth in the 1980s may force China to opt for investment in easy-to-build thermal plants and to defer long-term hydroprojects such as Three Gorges. China is already building more thermal power capacity than it had planned, and although industrial growth has slowed in 1986, we believe that serious power shortages are likely to continue. [redacted] 25X1

Overextended Resources

China's record for completing hydropower projects is poor. China actually commissioned only 400 MW of hydro capacity--two or three generators--in 1985, compared with 5,100 MW of thermal capacity, though it has had 10,000 MW of hydro capacity under construction for years. Most of the problem lies in overall management of the hydropower effort. Projects are frequently and wastefully postponed and later reactivated. Four of eight major hydroprojects begun in the late 1970s were shelved for two years or more; two of the four only recently resumed construction.[4] Even while some projects were on hold, those actively under construction had to compete for materials and investment funds. Moreover, over the last year, we suspect that dams designated as key national projects have had problems getting money that had been promised in the budget. [redacted] 25X1

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[3] See Bureaucratic Politics and Chinese Energy Development, by Kenneth Lieberthal and Michel Oksenberg, a contract study (#50-SATA-4-16230) for the Department of Commerce. [redacted] 25X1

[4] See appendix C for a list of hydropower plants currently under construction. [redacted] 25X1

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We believe China could handle construction of Three Gorges if it were the only major hydroproject, but plans call for an ambitious expansion of hydropower even without Three Gorges. China's official targets for large hydropower projects call for adding 28,000 MW of new capacity--twice as much as Three Gorges represents--by the

Table 1 Thousand megawatts
China: Power Capacity in 1985 and Targets for the Future

	1985	1990	2000
Total Capacity	86	110	240
Thermal	60	76	177
Hydro	26	34	63
Small Hydro	9	12	18
Large and medium Dams	17	22	45

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year 2000 (see table 1). We doubt China can marshall the resources to add that much capacity in that time period, but given China's severe power shortages and provincial-level support for other hydroprojects, Beijing is unlikely to scale back its plans either. In our judgment, MWREP will find itself overextended and behind schedule even without Three Gorges.

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Self-Reliance Versus Foreign Participation

Li Peng has emphasized that the Chinese themselves would build Three Gorges, and not turn the project over to foreigners. Whether the Chinese truly act as general contractors for Three Gorges, or assume the role in name only, we believe efforts to ensure maximum Chinese participation and the usual bureaucratic hassles encountered by foreign companies will lead to negotiating and construction delays.

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Moreover, the Chinese in our view misjudge their capabilities. US officials have recommended--in large part because of perceived problems in China's hydropower sector--that Beijing plan on spending at least three-fourths of the cost of Three Gorges abroad to buy construction equipment, building materials, electrical equipment (including all 26 generators), and to acquire foreign consultants and management for various stages of construction. MWREP, however, told US officials it wants to keep foreign exchange costs down to roughly 40 percent of project costs and to minimize outside foreign management. It is also considering importing the technology for the plant's 500-MW generators and building them in China. Either tactic is likely to delay completion, given China's lackluster record in hydropower construction and its ongoing problems with even trial production of smaller 300-MW hydroturbines. [redacted] 25X1

We also expect bargaining with foreign suppliers on equipment and engineering contracts to cause considerable delay. Based on our analysis of Chinese negotiating tactics, we believe the Chinese will play one vendor's quotes against another's--regardless of the time wasted in negotiation. For example, China began commercial discussions for the Guangdong nuclear power plant more than three years ago, but only last month signed a final contract for the reactors. [redacted] 25X1

The Potential Role for the United States: No Inside Track

We believe that no compelling advantage to US firms would evolve from either private or US Government contributions to the current round of feasibility studies. Past US contributions of hydroproject studies to China did not even guarantee US firms a right to bid on those projects, and MWREP has already told US Embassy officials in Beijing that any contributions for Three Gorges must include no "preconditions," even the right to bid. MWREP also said Ottawa was told that Canada's contribution of $5 million to the new studies did not preempt any other potential suppliers. [redacted] 25X1

If the project is approved, both financing requirements and Beijing's emphasis on self-reliance suggest that neither the United States nor any other country will be permitted to take the lead on Three Gorges. Consequently, US firms can expect substantial competition for all goods and services the Chinese seek for Three Gorges. China has purchased both hydropower construction equipment and expertise from the United States, but given the likely intensity of competition, price and financing arrangements will play a key role in all negotiations, and here US firms will be at a distinct disadvantage. If China builds Three Gorges, low-cost loans, grants, and supplier credits available from Japan, Canada, and elsewhere would give other foreign firms a competitive edge that may exceed the benefits of a cheaper dollar. [redacted] 25X1

In fact, a little-publicized supplier credit issued by Canada concurrently with the feasibility study donation may have given Canada a leg up on both the United States and Japan in supplying the hydropower generators for Three Gorges. Canada's US$252 million in equipment credits allows for technology transfer packages, and if the project goes ahead the Chinese could use this money to import Canadian 500-MW generator technology--dashing US and Japanese hopes of selling China 26 generators or the technology to build them. [redacted] 25X1

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Appendix A

Three Gorges: Who Is Calling the Shots

We believe the Ministry of Water Resources and Electric Power (MWREP) has consistently misrepresented both its ability to influence decisionmaking on the Three Gorges project and the chances the project will gain final State Council approval. Indeed, the recent creation of two oversight bodies by the State Council signals a decline in MWREP's influence and unhappiness with the way it had managed the project. [redacted] 25X1

The MWREP has marshalled every resource available in trying to convince the leadership to build Three Gorges.[5] Hoping for the dam's inclusion in the Seventh Five Year Plan (1986-90), MWREP's Minister, Madame Qian Zhengying, unsuccessfully tried in 1984 to sell the dam as an answer to East China's electric power needs, according to MWREP, who also told US Embassy officials they later placed more emphasis on the dam's other benefits--navigation and flood control.[6] We believe, MWREP remained deliberately vague about the height of the dam to gain maximum political support at the provincial level, hoping that a coalition of high and low dam supporters would lead to project approval before MWREP would have to choose a specific height.[7] [redacted] 25X1

We believe MWREP's main strategy, however, has been to try to give the Three Gorges project enough momentum to preempt strong opposition from arising before the State Council made a final decision. Last year the Ministry was instrumental in establishing a planning office to create a new Chinese province for the dam, called Sanxia. MWREP provided staff for the planning office, and used it as a springboard for a press blitz on the benefits of the Three Gorges dam--even hinting at support from Deng Xiaoping--to create the impression that its construction was a foregone conclusion. Articles in Hong Kong's Ta Kung Pao and elsewhere mapped out tentative boundaries for the province, and MWREP hinted through these articles that its own officials in the planning office should eventually govern Sanxia Province. [redacted] 25X1

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[5] In the process, MWREP proposals have undergone substantial revisions; initially they sought an even larger dam with 26,000-MW power capacity. [redacted] 25X1

[6] In studies carried out by the US Interior's Bureau of Reclamation in 1981 under the US-China Hydroelectric Protocol, US experts told MWREP that in cost-benefit terms the dam probably made more sense as a flood control project than as a source of electric power. [redacted] 25X1

[7] Most of those outside of MWREP willing to consider the dam favored a lower dam to keep down costs, including peasant relocation costs. According to Lieberthal and Oksenberg, Chongqing favors a higher dam that will allow oceangoing vessels to reach the city; the provinces downstream presumably also favor a higher dam with greater flood control capabilities. [redacted] 25X1

[redacted] 25X1

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Criticism Forces Postponement...

We believe MWREP's political maneuvering was ineffective and possibly counterproductive. In March of this year, outspoken opposition to Three Gorges surfaced at the sixth Chinese People's Political Consultative Conference (CPPCC). A well-received speech by economist Qian Jiaju--reported in both the Beijing and Hong Kong press--blasted the leadership's usual willingness to "give the nod" to large projects without comprehensive technical evaluations. Following Qian's speech, an earlier CPPCC review critical of Three Gorges was detailed in Ta Kung Pao. Then, in an April press conference, Vice-Premier Li Peng downplayed plans for a new province and belittled the planning office. In June, the leadership dissolved the provincial planning office and postponed a final decision on Three Gorges until late 1987.

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And a New Approach

In the meantime, the State Council has set up two new planning bodies for the project. According to Chinese press reports, both are directly answerable to the State Council, and neither includes any MWREP representation. The new groups represent a leadership effort to make a more informed and less political decision on the merits of the Three Gorges project.

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The Three Gorges Project Coordination Group will oversee a new round of internal bureaucratic review. It includes members of the State Council, the National People's Conference (NPC) Standing Committee, the CPPCC National Committee, and the Central Advisory Commission, namely Li Peng, Wang Renzhong, Cheng Zihua, and Bo Yibo.

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More powerful is the Three Gorges Project Examination Committee, which will evaluate new foreign and domestic feasibility studies, and make the preliminary recommendation next year on whether the State Council should approve the dam. Chinese press reports list Li Peng as chairman of this committee with two State Councillors as vice chairmen: Song Ping, head of the State Planning Commission (SPC), and Song Jian, head of the State Science and Technology Commission (SSTC).

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Li Peng was personally opposed to the project in the early 1980s, and in talks with US officials over the last two years he has been a lukewarm supporter at best. In an era of budget cutbacks and foreign exchange restrictions, he is already committed to another big-ticket item, China's commercial nuclear program, which has itself been cut back in recent months. Despite his influence and his position as "energy czar," we think Li will recommend Three Gorges receive State Council approval only if concessionary funding is available and the feasibility studies make the project appear quite sound. Even then, he may not prove a strong supporter of the project.

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Appendix B

How Big Is Three Gorges?

Although Three Gorges is not a high dam--the low design option of 160 meters would make it shorter than the 172-meter dam being built by the Chinese at Longyangxia--it is relatively long and--for a concrete-and-earth dam--massive; in volume terms Three Gorges ranks among the world's largest, many of which are lower, earth or rockfill dams. [redacted] 25X1

World's Highest Dams (Height above lowest foundation)

Rank	Name	Country	Height in meters
1	Rogun*	USSR	335
2	Nurek	USSR	300
3	Grand Dixence	Switzerland	285
4	Inguri	USSR	272
5	Boruca*	Costa Rica	267
16	Oroville	US	230
19	Hoover	US	221
---	Three Gorges	China	165-180?
63	Longyangxia*	China	172
66	Grand Coulee	United States	168

* Under construction.

[redacted] 25X1

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World's Largest Volume Dams

Rank	Name	Country	Volume (million cubic meters)
1	Chapeton*	Argentina	296,200
2	New Cornelia Tailings	US	209,500
3	Tarbela	Pakistan	148,500
---	Three Gorges	China	108,000
4	Fort Peck	US	96,050
---	Grand Coulee	US	8,093
---	Hoover	US	3,364

* Under construction.

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World's Largest Capacity Hydroplants

Rank	Name	Country	Current Capacity (MW)	Eventual
---	Three Gorges	China	----	13,000
1	Itaipu	Brazil/Paraguay	4,900	12,600
2	Guri*	Venezuela	2,800	10,000
3	Tucurui*	Brazil	3,760	8,000
4	Grand Coulee	US	6,494	6,494
5	Sayano-Shusensk	USSR	6,400	6,400
---	Gezhouba	China	1,215	2,715
---	Hoover Dam	US	1,345	1,345

* Under construction.

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World's Largest Capacity Reservoirs

Rank	Name	Country	Reservoir capacity (billion cubic meters)
1	Owen Falls*	Uganda	2,700
2	Bratsk	USSR	169
3	Aswan (High)	Egypt	169
4	Kariba	Zimbabwe	160
5	Akosombo	Ghana	148
24	Tucurui	Brazil	43
---	Three Gorges	China	37
25	Vilyui	USSR	36
---	Hoover	US	35
---	Grand Coulee	US	12

*Most of this reservoir was previously a lake.

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Appendix C

Large Dams Now Under Construction in China

City	Capacity (in megawatts)	Begun	Expected Completion
Lubuge	600	1982	1990
Tianshengqiao	1,150	1985	NA
Yantan	1,100	1984-5	1993
Tongjiezi	600	1985	1993
Dongjiang	500	1978	NA
Ankang	800	1978	1986
Shuikou	1,400	1986	1988-95
Shaxikou	300	1984	1988
Baishan	900	1976	1986
Longyangxia	1,280	1976	1989
Manwan	1,500	1986	1991

NA: Not available.

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