

# Explorers Club Flag Report



## Unearthing History in Porcelain: An Underwater Exploration of the Jingdezhen River

Field leader report: Damien Leloup FI'10  
Expedition Dates: October 14th to November 1st, 2013  
Location: Jingdezhen, Jiangxi Province, China  
GPS Coordinates: 29°18'27.88"N - 117°17'10.00"E, Elevation 38 meters  
Explorers Club Flag #132

### 1) Project Overview:



Photo: A farmer and water buffalo who cross the Nanhe River daily, inevitably stepping on a trail of century-old porcelains. For them, the ceramics scattered on the riverbed are just an ordinary part of daily life.

As the world's capital of porcelain making for over 1,700 years, today's Jingdezhen in Jiangxi province, southern China, holds a wealth of archeological material, which has been surprisingly untapped. Out of hundreds of kiln sites that have been in used in dynasties past, only a handful have been found and excavated.<sup>1</sup> In April 2013, a preliminary scouting mission was conducted based on the reports of a local artist who said that a river close to the main city of Jingdezhen contained abundant historical ceramic shards and source materials. A section of the Nanhe River (marked in Red in Figure 2) proved to be in the vicinity of an important Song Dynasty (960-1179AD) porcelain production area, and likely the site where

numerous ceramic wares were contemporaneously loaded onto boats for transport. After consulting with local specialists and authorities, the field leader decided to put together a team to explore the river. On October 14, 2013 the team began the first known archeological scuba diving expedition on this river site. The main objectives of this expedition were to:

- Research the historical significance of this Nanhe River site
- Collect, record, and protect all significant historical ceramic and ceramic-related materials found in the river
- Share discoveries with local, national, and international ceramic specialists, scholars and museums.
- Display major discoveries in museums or special exhibitions, while still allowing researchers to work on these discoveries if needed.



Photo: A Song Dynasty *qingbai* (*yingqing*) bowl found on Day 1 of our research.

The two weeks exploring the river site yielded over 240 important porcelain specimens and cemented our understanding of this area of the Nanhe River as an important historical and archeological site in Jingdezhen, not only as a locus of Song Dynasty ceramic culture, but also as a transport center in later dynasties. In order to further enlighten the local scientific community to historical importance of this river and its use in transport, future research should be conducted with Chinese ceramic specialists and scientists to survey additional underwater sites along the river and investigate nearby, previously undocumented, terrestrial kiln sites. In addition, since the local area is currently under the impending danger of destruction due to local construction, additional activism must be done to protect the territory for future archeological research.

## 2) Project Explanation:



Photo: An underwater photo of the Explorers Club flag next to a stack of Song Dynasty bowls that were fused together during the kiln firing process. The river basin area is littered with examples of such manufacturing mistakes and accidents.

Jingdezhen (otherwise known as the town of Jingde) was the site of the imperial kilns and has been the center of ceramic production in China for over 1,700 years.<sup>2</sup> The city grew up on the strength of its abundant local deposits of porcelain stone, large forests, and the Yangtze River which flows into two major river systems: the Donghe River and the Nanhe River, the latter being site of our current expedition. This coincidence of raw materials, fuel and cheap water-based transport made it possible for Jingdezhen to supply porcelain throughout Asia, Europe and America for centuries to come. Today, ceramics remain the major industry of the region, with gross annual output exceeding USD\$ 2.1 billion in 2011.<sup>3</sup>

In Autumn 2012, a meeting took place in Beijing between a well-known Chinese ceramic artist, Li Xiaofeng, and myself, the Team Leader of the Expedition, Damien Leloup, a trained underwater archeologist. Li told me that he and local Jingdezhen residents frequented the shores of the Nanhe River in Jiangxi to pick up ancient porcelain shards. It was an area that only local farmers and insiders knew about, and, as far as he knew, scientists had not yet researched it. Li wanted to know more about the history of the locale and what might be discovered at the bottom of the river. Intrigued, I offered to take a preliminary trip to Jingdezhen to explore this area further.

In April 2013, I undertook a preliminary scouting mission to Jingdezhen and the Nanhe River site along with artist Li Xiaofeng. During this initial visit to the river site, it was obvious that the region abounded in ceramic artifacts—the shoreline was littered with ceramic shards, and snorkeling in the then 8-meter deep section of the river indicated that the riverbed was full of ceramic materials.

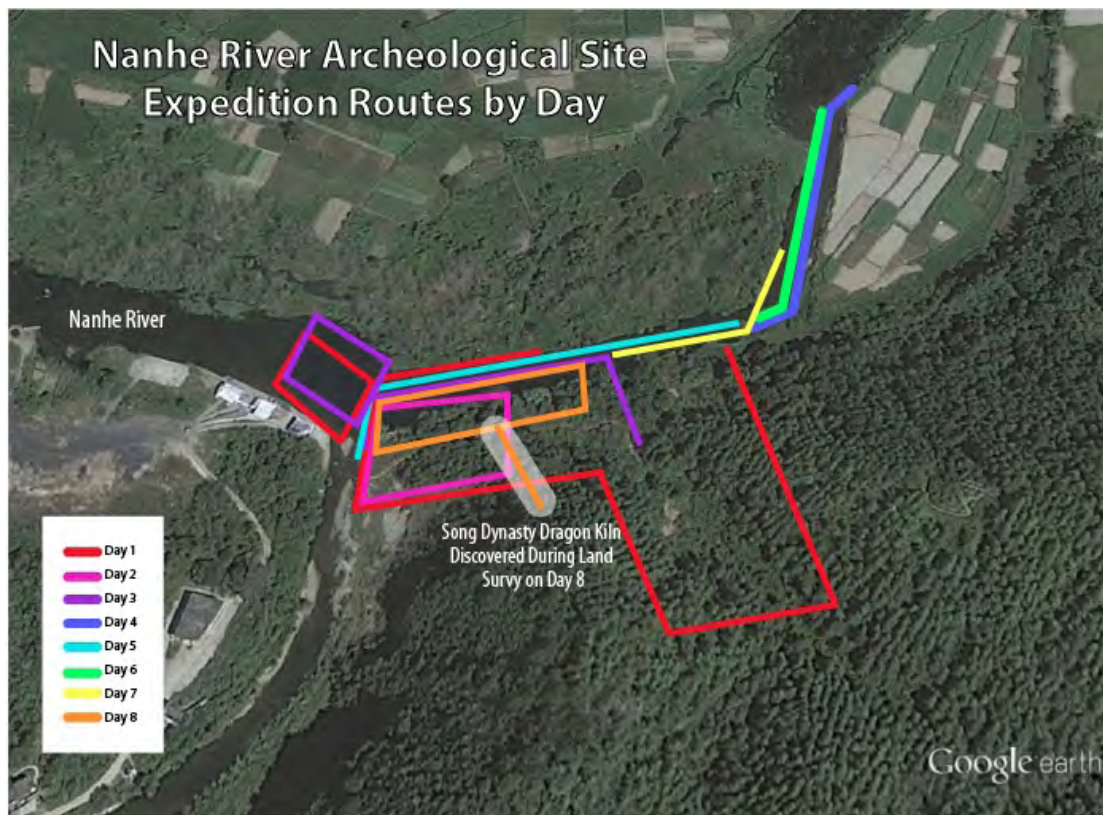
Initial observations of the Nanhe River site: the river basin is located in a mountainous region on the border of Jingdezhen, in an otherwise undeveloped area filled with coniferous woods. Maximum water depth estimated at 8 meters, strong currents, with water temperatures of approximately 19°C. Local farmers report that during September and October months water levels are at their lowest.

Since I am not myself a Chinese ceramic specialist, in order to better contextualize the history of the city and its ceramic culture, I also used this initial trip to Jingdezhen to meet with local Ceramic experts and specialists. I visited the Jingdezhen Ceramics Institute, the only institute of higher learning in China

dedicated to the study of ceramic arts, as well as the local Jingdezhen library and museum. Maps of the area surrounding today's metropolitan Jingdezhen suggest that the Nanhe River area was known for having several important ancient kilns along its banks dating from the Song Dynasty, though the site that was visited with Li Xiaofeng was not specified in the scholarly literature.

In addition, during this time, I met with Dr. Zhang Lingyun, a professor at the Jingdezhen Ceramics Institute and art historian, who was particularly enthusiastic in the project's mission. Zhang expressed her interest in serving as an academic scholar and reference for the expedition. Zhang would also serve a liaison with local officials in order to ensure that research activities were legal and discoveries could be circulated with official authorization. With this preliminary feedback, this project was ready to begin.

The importance of this Flag expedition is be threefold: (1) to research the previously undocumented significance of the Nanhe River site and surrounding areas in Jingdezhen's ceramic culture; (2) to conduct the first known underwater survey of this area; and (3) and to share these academic discoveries with national and international porcelain specialists, scholars, and museums.



**Figure 1:** Satellite image of the 365 meters along the Nanhe River explored during the expedition, divided into daily routes. Evidence of a previously unknown Dragon Kiln was discovered on Day 8.



Photo: Diving Team (from left to right)—Steven Schwankert, Damien Leloup, and Vicki Sheng

The Team:

<b>Name</b>	<b>Role</b>	<b>Nationality</b>	<b>Age</b>	<b>EC</b>
Damien Leloup	Team Leader, Expedition organizer, underwater photography	French	40	Explorers Club FI'10
Li Xiaofeng	Artist, discoverer of the site, adviser, and ancient porcelain specialist	Chinese	49	...
Dr. Zhang Lingyun	Art Historian, Archaeologist, Porcelain specialist, local authority facilitator	Chinese	38	...
Steven Schwankert	Chief Diver, logistics organizer, diving equipment provider	American	43	Explorers Club Asia Chapter Chair
Vicki Sheng	Scuba Diver	Taiwanese	28	...
Sherry Qiu	Driver, Logistics organizer	Chinese	36	...

The Team also would like to acknowledge the support of Ms. Tiffany Beres (an Asian art curator and artist, from California based in Beijing) for her artistic and linguistic support during the expedition, as well as Mr. Miguel Alvarez (a porcelain specialist from Hawaii) for sharing his knowledge, as well as taking a special trip to Jingdezhen towards the end of our expedition in order to study our discoveries, approve its handling, as well as enlightening us on several questions raised during the expedition.

**3) Project Objectives:**

The objectives of the expedition were directly in line with the Explorers Club principles: to operate in an uncharted location to the benefit of both exploration and science. This is the first documented underwater exploration in the Jingdezhen area, and the first systematic exploration of the archeological remains surrounding the Nanhe River basin area. Archeological discoveries made under the water and in the adjacent shores are aimed at:

- Non-commercial dissemination of knowledge about Jingdezhen ceramic culture and its local underwater archaeological heritage;
- Implementation of a scientific research program (gather relevant scientific data by measuring, photographing, and filming all discoveries) to further increase knowledge of the Nanhe River area and surrounding ceramic production sites; and
- Archaeological and environmental protection by raising awareness and conducting exhibitions

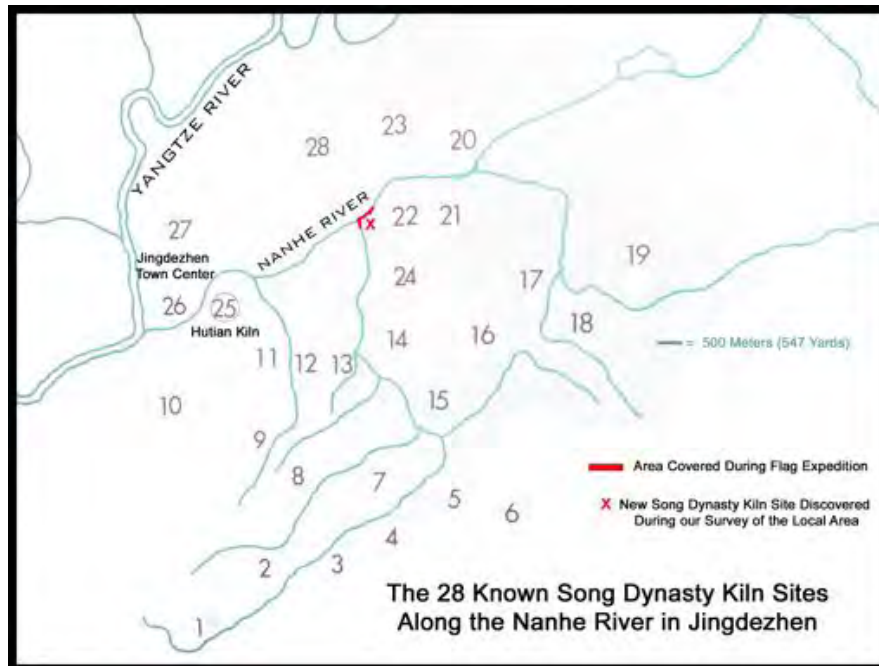


Figure 2: The 28 Known Song Dynasty Kiln Sites in the Greater Nanhe River Area

The Nanhe River Valley contains the site of some 28 documented Song Dynasty (960–1127 AD) kiln sites, some of which began production earlier during the Five-Dynasties Period (907–960 AD), operated in the following 600 years through the two dynasties of Song and Yuan and apparently stopping production in the middle of the Ming Dynasty. These kilns were in use for the longest time and the largest in scale among all the porcelain kilns in Jingdezhen.<sup>4</sup> The archeological remains of these Nanhe River kilns, including broken porcelain objects and tools, are of high value to the study of the history of Chinese culture, art history, and ceramic techniques. In particular, due to the continuous ceramic production of the area, artifacts from this region demonstrate an evolution of forms and techniques—previous archeological surveys have either focused on underground-unearthed artifacts or on samples from mounds of exposed ceramic waste materials, as these piles of leftover ceramic pieces can often be dated with stratigraphy.<sup>5</sup> Based on the reports of local scholars in the area, to date, no known underwater archeological surveys have been conducted in the Jingdezhen area.

Previous documented accounts of the Nanhe River Basin as a ceramic center date from Jiang Qi’s *Taoji [The Record of Ceramics]* written between 1214-1234, which discusses the *Hutian* kilns locality.<sup>6</sup> The British Sinologist A D Brankston (1909-1941) travelled to Jingdezhen in the 1930s and compiled a detailed record of the porcelain sites at *Hutian* and *Zhushan* nearby the Nanhe River. Later surveys and investigations of the area were conducted by Liu Xinyuan of the Jindezhen Ceramics Archaeological Institute in 1972, and Sir John Addis, who published “A Visit to Jindezhen” in 1975. From 1985-2004 the Institute of Archaeology of Jiangxi Province conducted 16 large-scale excavations at the *Hutian* ancient kiln site to the West of the area explored by our team.<sup>7</sup> The significance of the ancient *Hutian* kilns to our own research is that *Qingbai* (also known as *Yingqing*) ware, is thought to originate at the *Hutian* kilns.<sup>8</sup> The many *Qingbai* pottery underwater discoveries we made during the expedition in the Nanhe Riverbed area may continue to further illuminate that theory.



Photo: (left) a Song Dynasty *qingbai* (*yingqing*) bowl fused to its original protective saggar, a fireclay box.

Figure 3: (right) A cross-section drawing of a Song Dynasty Porcelain bowl inside its saggar stacked on top of another saggar. Each bowl sits on a ring support to prevent the fusing seen in this photograph of a *qingbai* bowl (Image courtesy of Tiffany Beres)

#### **4) Project Methods:**



Photo: The majority of underwater ceramic specimens included bowls, plates, and ewers. This series of 11 plates from the Song Dynasty were rejected 1,000 years ago, and most likely have lain in the riverbed since then.

The underwater exploration of the 365-meter section Nanhe River basin area was carried out as a general archeological survey, involving the methodical documentation, contextualization and study of artifacts and the local surrounding areas. After applying to the local relics bureau of Jingdezhen in September 2013, our team was given oral authorization to gather ceramic samples from the riverbed surface and shore areas; no underground excavations could take place without additional levels of clearance and official affiliation with a Chinese academic institution.

Upon arrival, the team developed a topographical survey of the Nanhe River basin—the first day was spent charting the deepest water levels (up to 6 meters) and getting an overview of the basic land formations and geography of the area. Since the water was much shallower in October than the previous spring, some archeological sampling could be preformed while standing in the shallow waters, most was

performed during snorkeling (in low-water levels), and some required scuba diving (in waters deeper than 1.5 meters). All underwater sampling techniques included photographing and filming the archaeological context, as well as measuring and surveying the physical properties and location of artifacts. If samples were deemed important enough for removal, they were inventoried based on shape, cleaned, and conserved for later analysis and possible exhibition. A daily field log was kept to record all discoveries and observations, as well as the specific routes traveled each day (Figure 1).



Photo: An example of a slightly collapsed but complete Song Dynasty ewer discovered with a shrimp family living in the saggar. The thriving flora and fauna of the Nanhe River ecosystem as well as high visibility suggests minimal environmental degradation in the area.

As each surveying team member had diving experience in China, we were prepared to dive in the area wearing full dry suits. Considering the widely reported environmental issues within the country, especially in relation to polluted waterways, we were surprised to find the Nanhe River valley ecosystem looking very healthy and stable. We decided after a first environmental assessment that no in-depth environmental survey was needed.

Initially, a side-scan sonar was thought to be useful for our research, but given that we did not have authorization to perform underground excavation, such technology was irrelevant to our survey. Fortunately, the waters of the Nanhe Rivers were crystal-clear, and visibility was in upwards of 20 meters. If later follow-up expeditions were to take place, the use of a multi-beam sonar would be useful for the sole purpose of imaging the underwater site. Additionally, if we were granted additional levels of clearance and digging authorization through the relics bureau, a sub-bottom profiling sonar might be used to detect potential structures buried beneath the riverbed.



## 5) Project Results:



Photo: The diving team on the shores of the Nanhe River at a site where Song, Ming and Qing Dynasty porcelain specimens were discovered.

Over the course of the two-week period in Jingdezhen 240 ceramic specimens were collected, contextualized, and classified in this first underwater and on shore archeological study of the Nanhe River basin area. Today, all the findings have been conserved and grouped: about half of the specimens collected remain in Jingdezhen for further study, the other half have and will continue to be used for academic research and enhancement by sharing them with museums and institutions. The underwater archeological research we conducted is meaningful not only because the samples we collected showcase the specification and diversification of wares produced in the region over the centuries, the underwater specimens are also interesting for specialists to study since they are not subject to the same environmental effects that terrestrial archeological specimens are.

### **Total Number of Collected Ceramic Specimens = 240**

<b>Complete Ceramic Wares 12</b> (typically be fused to saggar or misshapen)				<b>Ceramic Shards &amp; Clay Parts 228</b>			
<b>From the river</b>		<b>From the shore</b>		<b>From the river</b>		<b>From the shore</b>	
8		4		156		72	
Recently fallen in water	Prolonged water exposure	Found by Team Surveying	Found by local farmer	Recently fallen in water	Prolonged water exposure	Found by Team Surveying	Found by local farmer
3	5	3	1	37	119	67	5

**List of 12 Complete Ceramic Wares (in chronological order):**

- 1 Early Northern Song *Qingbai* ewer
- 1 Late Northern Song *Qingbai* bowl
- 2 Early Southern Song Dishes with no impressed motif
- 5 Early Southern Song Dynasty *Qingbai* ewers
- 2 Song Dynasty (specific period as yet unidentified) collection of fused dishes still in saggars
- 1 Song Dynasty (specific period as yet unidentified) *Qingbai* dish with impressed motif

**List of 228 pieces, shards, & clay parts (in chronological order):**

- 3 Early Northern Song Dynasty ewer spouts
- 5 Northern Song *Qingbai* bowls with high foot ring
- 26 Early Northern Song ring supports (see photograph above)
- 17 Southern Song disc shape ring supports (see photograph above)
- 32 Early Southern Song *Qingbai* bowl bases with motifs
- 14 Southern Song ewer lids
- 8 Southern Song *Qingbai* bowls with curved lotus petal designs
- 7 Southern Song dishes with impressed lotus motif
- 52 Song Dynasty ewer spouts
- 28 Song Dynasty ewer handles
- 17 Song Dynasty (specific period as yet unidentified) bowls fused to disc support
- 18 Qing Dynasty shards
- 1 Early Republic Period porcelain bowl

The vast majority of ceramic specimens we found in the water were Song Dynasty *qingbai* ('blue-white') otherwise called *yingqing* ('shadow blue') wares that take their name from the cool blue color of the glaze.<sup>9</sup> Today the exact origin place of *qingbai* remains unknown;<sup>10</sup> however, given the sheer quantities of both underwater and terrestrial specimens that we observed, as well as the historical evidence that demonstrates that production in this area lasted for hundreds of years, we submit the possibility that this region of the Nanhe River is an important key. Specifically, given the early and later ring support materials we discovered, as well as the great variety of *qingbai* glaze types and potting differences observed, it is clear that production methods from this region were greatly differentiated and evolved over time. Additional research must be done, including Thermoluminescence Testing (TL) and composition analysis of the glaze and ceramic bodies, but we hope that the specimens that we collected may help specialists to better chart the evolution of the *qingbai* (*yingqing*) porcelain.



Photo: (left) ring support (right side) and disk support (left side) used to prevent fully glazed ceramic bodies from fusing to objects underneath. Ring supports were used during the Northern Song (960–1127) and later replaced by disks during the Southern Song (1127–1279) and later dynasties.<sup>11</sup> Since we discovered both support types in and around the Nanhe River site, it is clear that this was an important area in ceramic production throughout the Song. Photo: (right) The bottom part of a Southern Song Dynasty porcelain fused to its disk support.

In addition to *qingbai* ware from the Song Dynasty, our underwater archeological survey also yielded ceramic specimens from the Five Dynasties Period, Yuan, Ming, Qing and even Early Republic Period of China's history (roughly the period spanning 900-1950AD), further illustrating the importance of this river site in Jingdezhen's ceramic production history. This diversity historical of ceramic is especially interesting, in light of the generally accepted theory that production in the area stopped 400 years ago During the Ming Dynasty (1368–1644).<sup>12</sup> Dr. Zhang and other experts with whom we consulted said that this river area was likely the site where ceramics were directly loaded onto barges that would then go upriver to the Yangtze River to be traded or loaded onto bigger ships. Evidence of such a variety of ceramics from different periods suggests that the greater Nanhe River area might have supported kiln production from different periods, or that these river barges from later periods might have traveled through the area carrying wares from other production sites, occasionally dropping pieces into the water along the way.

Of particular significance, on Day 8 of our expedition, the last day of our exploratory survey of the territory surrounding the Nanhe River site, we came across evidence of a so-called “dragon kiln” in the mountains directly leading to the river valley. An ancient technology that originated in China dating from around 200AD, dragon kilns operate on the simple principle that hot air rises—a long, tubular wood fueled firing chamber is built on a hill slope, sometimes up to 60 meters long, with various stoke holes on the side, giving it the appearance of a dragon when viewed from above.<sup>13</sup> Concealed by earth and vegetation, as we were walking up the sloping hills we noticed a continuous 1-meter wide mound of earth going up the hill—a good indication of a man-made underground tunnel. Given our vicinity to the river, as well as the fact that this kind of kiln technology was prevalent during the Song Dynasty, it is likely that this tunnel was part of a dragon kiln used in the production of some of the ceramic specimens we uncovered. Less than 100 dragon kilns have been excavated around greater China, and none are specifically known in this region of the Nanhe River basin.<sup>14</sup> Given that no evidence of recent manmade unearthing of this area was found, we believe this is the first recorded discovery of this dragon kiln. We have reported our finding to Dr. Zhang, and we hope that this ostensible dragon kiln site can be further researched and protected.

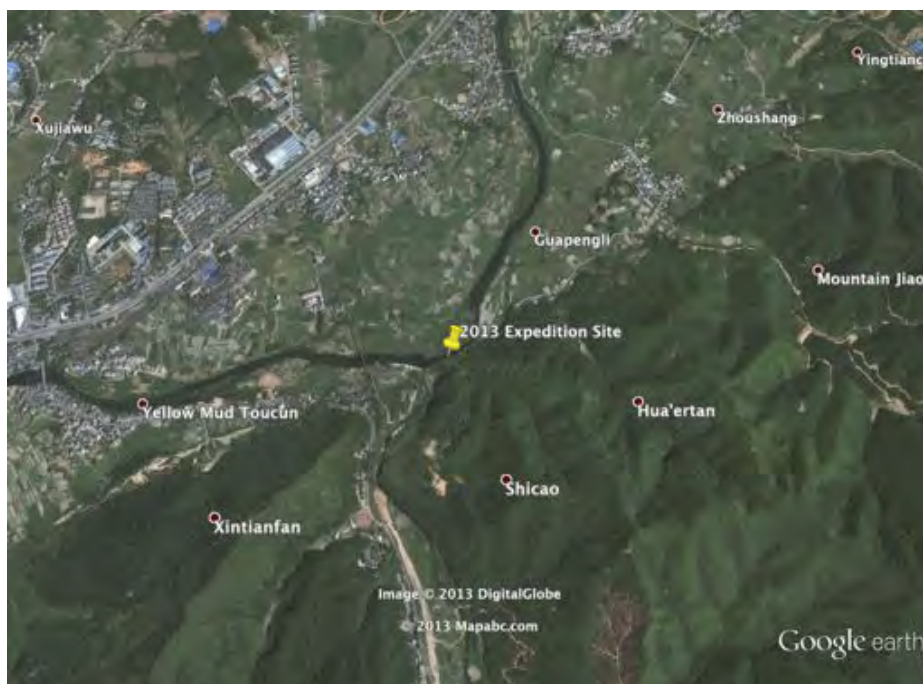


Photo: A fused set of excavated *qingbai* (*yingqing*) bowls donated to the Canadian International School of Beijing Museum in November 2013.

Beyond the direct archeological research, our exploration of the Nanhe River site has always been about disseminating knowledge about Chinese ceramic history. Since the completion of our exploration of the Nanhe River, our archeological findings have been taken to museums, institutes, schools, and conferences within China, and we have shown specimens and discussed our work with scholars, academicians, journalists and children. As publication is also a crucial part of the archaeological process, after concluding our expedition in Jingdezhen, we have submitted article proposals to several journalists, writers, and publishers. To date, I have had interviews with a New York Times correspondent in Hong Kong, the Wall Street Journal correspondent in Beijing, and the Archeology Magazine journalist from the USA, and articles are imminent. Meanwhile, we are still applying for permission from the Chinese Relics Bureau to bring some of our archeological discoveries out of the country for exhibition in New York at the Explorer's Club. Altogether, we are excited and encouraged by the feedback.

## **6) Project Implications:**

Today, the field of underwater archaeology and exploration in China is at a level of genesis. In part for political reasons, China has recently been funding large-scale state-run marine-archaeology programs: the Center of Underwater Cultural Heritage was established in 2009 to oversee underwater archeology in the country, at least 3 underwater-archaeology museums, have recently opened, and next year China plans to launch a 56-meter ship designed for marine archeology, the first of its kind in the country.<sup>15</sup> It is a welcome change that China is investing in underwater archaeology programs, and although there is almost no foreign participation in China's current nationalized underwater archaeology programs<sup>16</sup>, I look forward to a day when there are opportunities for such collaborations to occur. In order to strengthen the conservation of and research on archaeological sites and finds, we hope that our expedition results and our educational outreach might in some way encourage this kind of international archaeological collaboration. Moreover, we believe our project has also demonstrated the feasibility and importance of doing underwater archaeology, not just in disputed maritime territories or on historical sunken ships, but also within China's own inland waters.



**Figure 4:** Satellite image of the Nanhe River East of the city of Jingdezhen, showing the current lack of urban development in the area south of the expedition site.

Lastly, research aside, it is also important to discuss the environmental observations we made during our expedition. When the team entered the pristine river on the first day of explorations we were pleasantly surprised at the healthy aquatic habitat and environment of the Nanhe River area. Unfortunately, however, on day 7 of our expedition, we began to hear the sound of construction, a sound that seemed to get closer and closer as the days followed. Now we have learned that a local businessman has purchased the land surrounding the Nanhe River, including the dragon kiln site, and he plans to develop the area into new commercial residences. It goes without saying that such construction would likely cause irreparable damage to the environment while also damaging the archeological material that abounds in the area. On the one hand, the archeological relics cover a vast area, so it takes much work to protect them; on the other hand, there is scant awareness of cultural heritage preservation among the locals. Historically, this River Basin site was kept in good condition because of poor transportation to the region. Now if a direct road is built to its shores, the environment and the archeological material contained therein face a growing threat. We have contacted a few Jingdezhen notables, including the president of the Jingdezhen Ceramic Institute, to see if they could help us to advocate for the conservation of the area, but up to this point little progress has been made. We hope that our discoveries and public discussions about the Nanhe River basin, including our rich underwater and terrestrial archeological finds there, can help motivate people to take an active stance towards preserving this site for the future.



Photo: A tractor clearing the way for a new road to be built directly to the Nanhe River Site, and consequently damaging the ceramic artifacts that have existed into this environment for centuries in its path.

## References

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- <sup>1</sup> Museum label, "The Kilns of Jingdezhen," Jindezhen, Jingdezhen Official Kiln Museum, 10 October 2013.
- <sup>2</sup> "Jingdezhen," *Wikipedia*, last modified November 24, 2013, <http://en.wikipedia.org/wiki/Jingdezhen>
- <sup>3</sup> "Jingdezhen (Jiangxi) City Information," *China Knowledge*, last modified 2013, <http://www.chinaknowledge.com/CityInfo/City.aspx?Region=Central&City=Jingdezhen>
- <sup>4</sup> Fung Ping Shan Museum. *Ceramic Finds from Jingdezhen Kilns 10th-17th Century* (China: Shiny Offset Printing Co.: 1992), 100-103.
- <sup>5</sup> Adam T. Kessler, *Song Blue and White Porcelain on the Silk Road* (Leiden: Brill Academic Publishers: 2012), 360-363.
- <sup>6</sup> *Ibid.*, 358.
- <sup>7</sup> *Ibid.*, 360.
- <sup>8</sup> Fung Ping Shan Museum, 73.
- <sup>9</sup> Stacey Pierson, *Qingbai Ware: Chinese Porcelain of the Song and Yuan Dynasties* (London: Percival David Foundation of Chinese Art: 2002) 21.
- <sup>10</sup> *Ibid.*, 26.
- <sup>11</sup> NK Koh, "Qingbai (Yingqing) Wares," Koh Antiques, last modified October 2013, <http://www.koh-antique.com/qingbai/qingbaimain.html>
- <sup>12</sup> Fung Ping Shan Museum, 49-51.
- <sup>13</sup> "龙窑," Baike, last modified November 28, 2012, <http://www.baike.com/wiki/%E9%BE%99%E7%AA%91>
- <sup>14</sup> Dr. Zhang Lingyun. Interview with Damien Leloup. Personal interview. Jingdezhen, October 23, 2013.
- <sup>15</sup> Jeremy Page, "Beijing Takes Territory Dispute to New Depths," *Wall Street Journal*, December 2, 2013, accessed December 3, 2013, <http://www.online.wsj.com>
- <sup>16</sup> *Ibid.*