

TRADITIONAL WATER MANAGEMENT PRACTICES: A CASE STUDY OF BHAKTAPUR CITY

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February, 2005

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ACKNOWLEDGEMENT

Though this research study seems a single-handed endeavor carried out by the researcher alone, it comprises of the invaluable contributions of different individuals and institutions from different sections.

The researcher, at first, would like to extend his gratitude to Jalsrot Vikas Sanstha (JVS)/Nepal Water Partnership for making him available the financial support to conduct this study. He also takes this moment to express the heartfelt gratefulness to Dr. Vijaya Shrestha, member of JVS who was instrumental to enhance the quality of research through her insightful comments and perusal besides her supervision of the entire study. He owes much indebtedness to Dr. Prachanda Pradhan, chairman of Farmer Managed Irrigation systems (FMIS) Promotion Trust for his perpetual encouragement and guidance in order to orient this study towards the proper direction.

The researcher is very much obliged to Mr. Lila Bhakta Munakarmi, historian and cultural expert of Bhaktapur who furnished numerous precious documents and shared his knowledge to give this study a much needed boost from cultural perspective. He attributes his deep acknowledgement to Heritage Branch, Bhaktapur Municipality for providing rare information as regards the scientificity of cultural practices still being adopted in the management of water heritages. The staff of Janajyoti library, Bhaktapur and ICIMOD library, who were always helpful to provide the relevant materials during his literature survey, deserve his high appreciation. His special thanks go to all the respondents including the local elders who enthusiastically participated and provided information during the case studies. The researcher also acknowledges the help of Mr. Krishna Prasad Ligal and Ms. Sulochana Sijakho, Bhaktapur residents without the support of whom it was nigh impossible to interpret the Newari version of local respondents. He is much indebted to Mr. Indra Rai and Mr. Samundra Sigdel who rendered their support in computer works all along.

Last but by no means the least, the researcher thanks his spouse, Mrs. Jyotsna Rai for imparting conducive milieu with constant inspiration throughout the research study.

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ABSTRACT

Water is intrinsic part of human life. Right from the birth to even after the death, it is inevitable in different activities. Since age-old value systems and rituals have governed our life, culture forms the pivotal aspect while executive these activities.

Water management needs to consider multi-linear aspects. Thus it needs holistic and integrated approach making inter-linkages with different sectors and resources. This research report has been prepared on the basis of the case documentations of two major water sources viz. stone spouts and ponds. It has endeavored to explore the hitherto neglected cultural perspective in holistic water management.

With the impact of urbanization, many of indigenous water heritages have been either disappeared or damaged. They are no longer the potent water sources and most of them are highly contaminated. Besides, their drainage system is very poor. Consequently, excess water pooling is obvious around them. Traditional institutions like *Guthi* are almost redundant and the strict rules and regulations envisioned in the inscriptions made by the rulers, community as well as commoners with the conceived purpose of merit making no longer make any sense in the vulnerable state of such water heritages. Municipality, caretaker of these sources, can blend these water sources with the modern supply systems in order to solve water problems of the city especially during lean period if community is effectively mobilized.

GLOSSARY OF LOCAL TERMS

Asta Matrika: Eight revered Goddesses that are believed to have spiritual power to keep Bhaktapur city safe.

Char Dham: Four religious shrines where religious Hindus believe to pay visit for spiritual salvation.

Chaukidar/Dhalpa: Watchmen/Water inspector.

Chowk: Central place where two or more alleys meet.

Dakshinabhimukh Hiti: Water conduit with its spout facing towards south.

Danchi Appa: Type of heavily burnt and ripe local brick.

Dhobis: Washer-men.

Dhunge Dhara: Stone spout in Nepali.

Guthi Sansthan: Administrative unit to manage and maintain ancient heritages.

Guthi: Trust for the maintenance of spouts and ponds.

Hiti: Local Newari name for stone spout in Kathmandu valley.

Jaran: A rectangular stone water-conduit.

Kuwa: Dug-well.

Naag: Serpent, a revered water deity believed to protect the water structures.

Paschimabhimukh Hiti: Water conduit with its spout facing towards west.

Pati/Pauwa/Sattal: Temporary shelter for passers-by.

Pith: An elevated space that used to serve as the fort.

Pokhari: Pond in Nepali

Pukhu: Pond in Newari.

Purwabhimukh Hiti: Water conduit with its spout facing towards east.

Raj kulo: Royal canal.

Runche: A symptom of disease in small child in which the child keeps on wailing and crying.

Shiva Linga: Phallus of Lord Shiva.

Shraddha/Tarpan: Religious offering to the deceased.

Tantrik Shakti: Supernatural power.

Tole: Local area representing a community.

Uttarabhimukh Hiti: Water conduit towards north.

Chapter 1: Bhaktapur City - An Introduction

1.1 GENERAL INTRODUCTION

Bhaktapur district with 13,846 ha. area (Kwopring, 1997) comprises of 16 VDCs and 2 municipalities. Bhaktapur city is one of the municipalities. It has 17 wards altogether out of which ward no. 4 is the largest one and ward no. 9 is the smallest. Bhaktapur, literally the 'City of Devotees', is renowned for its elegant art, fabulous culture, colorful festivals, traditional dances and the typical Newar lifestyle.

The rice production of this district used to be enough to feed the entire population of Kathmandu valley in the past. Therefore, it was called as Bhatgaun (literal meaning of *Bhat* is rice and of *Gaun* is village). Later, it was called Bhadgaun. Some inscriptions show that it was called Bhadra Gram (village of gentle people). In the inscription of King Mandev I of Devpatan in 477, this city was known as *Kwopring*. Later, it was called only *Kwopa*. In the inscription of Shivdev and Anshuverma in 537, the name *Makhopring* was mentioned (Prakash, 2000). Some evidences show that people in this city had profound religious devotion due to countless temples and shrines so it was called *Bhaktaharuko Pur* (abode of devotees).

This conch shaped historic city, Bhaktapur, spreading over an area of 119 square kilometers and lying at 13 kilometers east of Kathmandu, is situated at 1331 meters from the mean sea level.

In spite of continual invasions by intruders and natural calamities, the historic city still boasts of its superb art and subtle culture so vividly depicted on the remaining palaces, temples, monasteries, *Biharas* and other monuments truly making it the 'City of Culture'.

Bhaktapur is predominantly comprised of the peasantry. Painting, carving, masonry, bronze -casting , jewelry, pottery, etc. are other traditional enterprises still existing.

Monuments and artistic carvings on wood, stone and metal are strewn all over the historical core of the city. Alleys and narrow and zigzagged lanes lead you to see the environment of Newar medieval settlements.

Three main squares of the city are remarkably attractive in their artistic exposition of elegant temples, dignified palace, graceful monasteries and Biharas standing around these open public places and connected to one another with quaint streets. Durbar Square, Taumadhi Square, Changu Narayan, Suryavinayak and Nagarkot are some important places in Bhaktapur District ('Bhaktapur' Brochure, Bhaktapur municipality).

1.2 HISTORY OF THE CITY

History shows that King Ananda Dev Malla founded this Bhaktapur city during 13th century (Prakash, 2000) and had ruled over it for two decades. In 15th century, king Yaksha Malla heavily fortified this city. *Asta Matrika* were installed for the divine protection of this city. *Masan Ghats* (Cremation and burial sites of dead bodies) had also been constructed.

Jayasthiti Malla made many rules and regulations to the inhabitants of Bhaktapur. They were inscribed in religious scriptures. This city was the capital of the Malla kings for almost 315 years till the reign of king Yaksha Malla. He divided the then *Nepal Mandal* (entire valley of today) into four principalities for his four sons. Being a capital city, it had excelled in art, culture and other infrastructures in comparison to other cities. This city was fortified during the reign of Yaksha Malla. This city was surrounded by tall walls at inner banks of the rivers of Bhaktapur in such a way that the rivers were kept outside these walls.

1.3 SETTLEMENT PATTERN

Earlier, all the houses within the city area were of same height (four storied buildings), of same pattern and structure, of thatched roof and of equal slope of the roof and with an odd-numbered windows. Such characteristics were unique and found nowhere. Hence, this city was a living heritage site. As many as houses were built in this city occupying less area thus making high population density and it had nurtured harmony and solidarity between the people. However, the earlier patterns of houses have no longer remained the same. Some hold the opinion that to preserve the cultural heritage of this city, provision should be made for the uniformity of houses in terms of patterns and heights so that this city still can boast of as the cultural confluence. Municipality has recently introduced a building by-law that shows the provision of 50% incentives to the locals if they build houses with wooden doors and windows preserving the ancient art and artifact.

The city had 24 *Toles* and 99 *Chowks* earlier. *Pati/Pauwa*, *Kuwas*, *Hiti*, temple, *Chowk*, courtyard, drainage, alley, road were made in different places for fulfilling the entire needs of people. Many *Chowks* have vanished with the natural calamity like great Earthquake of 1990 B. S. and human intervention and encroachment. There are still 10 to 15 *Chowks* in this city like *Bhairav Chowk*, *Jaran Chowk* and *Kumari Chowk*.

With the new settlement and new housing construction within the old settlement, the pristine and original set-up has been somehow affected.

Chapter 2: Context of the Study

2.1 NEED OF RESEARCH

There are large number of researches conducted to study the water management practices with technical perspective from both the government and non-government sectors. However, social, cultural and economic aspects of analysis especially on the traditional management practices have not received due attention. Very scanty information is available in this regard though traditional water sources such as *Dhunge Dharas*, *Rajkulos* and ponds also contribute in the sustainable water management. Making realization of the dearth of necessary research and their great significance, the study was carried out in Bhaktapur city, hub of socio-cultural heritage. The purpose of this study is to look at the traditional management practices of water belonging to *Hitis* and ponds for drinking, domestic use and for agriculture, among others.

2.3 OBJECTIVES

The broad objective of this research is to study the traditional water management practices in Bhaktapur city. Its specific objectives are:

- To develop case studies of selected *Dhunge Dharas* and ponds and;
- To explore the established linkage between water, culture and management practices.

2.4 RATIONALE

This study has been carried out within the city areas of Bhaktapur district. Being at close distance from Kathmandu, the areas to be studied have easy access. Since the case studied water sources have no much different features than Kathmandu and Lalitpur, they can be representative for the entire valley. Areas of Bhaktapur city are less congested and pace of modernization hasn't encroached the very fabric of the society. Thus ancient glory and socio-cultural practices and values are expected to have remained less encroached. Moreover, it is believed that the social cohesion is not much fragile in this city with potential tradition of community efforts in water resource management.

Chapter 3: Research Methodology

3.1 LITERATURE REVIEW

Water is intrinsic component of human life right from the birth to death. It has multiple values such as religious/spiritual, social, economic, aesthetic, medicinal and others. With the growing competition and conflict over the multiple use of water, its management has been a crucial issue today. The infrastructure development alone can not be sufficient for water management. Values, customs and rituals have equally important role. Culture is plays pivotal role which guides different value systems of our life and thus is indispensable part in management of scarce water. Sprinkling water brought from holy rivers for purification and expiation is rife still in our culture. Different rituals such as *Shradhda* and *Tarpan* are performed nearby rivers and other water sources. Dipping in sacred rivers during certain planetary configurations have the potential of washing away past sins and accumulating religious merit. Long and arduous pilgrimages are undertaken just to take a dip in sacred rivers at those configurations (Sharma, 1994).

The world's best-known human civilizations are based on water civilizations since they have been evolved at the bank of river, sea and other water sources. Thus, water management should be studied with the cultural perspective. Cultural practices, beliefs, customs, do's and don'ts and cosmic relationships are important factors to understand the philosophy and practices of water management resource in a given community (Sen et. al., 1997).

Integrated Water Resources Management (IWRM) suggests the holistic approach of water use for 'economic and social benefit without compromising the sustainability of vital ecosystems' unlike the conventional system where water was separately dealt as per the purpose. Dhaka declaration on south Asia Network on water and culture envisions "the development of a sound, clear and simple sustainable IWRM system in south Asian countries to respond to challenges of water resources in relation to cultural values and practices". The meeting resolved that a fifth guiding principle be added to that existing set of four principles of Dublin Declaration as " Water has a unique cultural value which should be given due consideration in the development of IWRM and the promotion of peace and harmony".

In Nepal, various traditional sources of water such as Dhunge Dhara, ponds and others are found in use for drinking water preceded by irrigation and other secondary purposes. The state took leading role in the construction of the water system while community played a key role in the management of such systems. From the regime of Lichchhavi to Malla and still up to Shah, a lot of such initiatives have been made. As many as 27 of about 160 inscriptions known so far during the Lichchhavi rules are exclusively related to water and its usage. (Tiwari, 1998).

During Lichchavi Period (78 to 880 AD), a king commissioned a large water supply project to resolve the grave water crisis, taking advantage of the naturally created ponds as well as of the existing natural channels of water. This system was later called the *Rajkulo*. Before 464 AD, King Shankar Dev constructed Shankhu *Rajkulo* for the purpose of making available drinking water and irrigation to the people of the city. In the 17th century the edict of King Ram Shah mandated water resources related conflicts to be settled at the community level itself. Under the guidance of General Bhimsen Thapa, the first Prime Minister of modern Nepal, a *kulo* had been dug out from the *Pokhari Tal* (pond-lake) of Raniban of Kirtipur, 20 kilometers from the heart of Kathmandu in 1829 AD (Pradhan and Gautam, 2003). Many ponds of Kathmandu valley were constructed during medieval period and they were mainly for extinguishing fire so they were located at the center of the city (Parajuli, 2001).

Bhaktapur city is rich in water heritage. There are still few *Raj Kulos* in this district as mentioned in the inventory report prepared by FMIS Promotion. Bidol irrigation system, Sudar, Taleju Bhawani Jane Kulo, Bageswori and Katunje *Raj Kulo*, Katunje are few of them.

There are dozens of stone spouts in Bhaktapur built during Lichchavi era (known as *Pranali* at that time). In developing *Raj Kulos* in Bhaktapur, king Jitmitra Malla's contribution is immense. He had developed small water spouts originated from Mahadev Danda, some 6 km far from Bhaktapur city and collected water in the form of Mahadev Khola. Later, water was carried to Sundhara of Thunthu Palace through canal. He had instituted *Guthi* and formulated rules for the maintenance of these systems. Still, the Puja of Taleju temple of Bhaktapur is performed with the holy water of Sundhara. And, this stone spout is decorated with the figures of frog, crocodile, tortoise, serpents and other water-animals. It was believed that construction of water spouts/systems for the benefit of people would bring merit. Rich and poor were equally encouraged to make provision for drinking water for the same. There is a Dhunge Dhara in Byasi *Tole* of Bhaktapur called Pulan Dhara which was constructed by a widow with her investment that she could manage by cotton weaving during the day of Ekadashi. There are 39 ponds only inside Bhaktapur municipality. Siddha *Pokhari*, Mahadev *Pokhari* and Naag *Pokhari* are some important ponds of Bhaktapur having a lot of religious significance. There are still 103 *Dhunge Dharas* in Bhaktapur though many have disappeared in the last decade round. (Amatya, 2003).

Strict prohibition and even corporal punishment are envisioned in our religious scriptures for those who pollute water sources by spitting, urinating and washing. Drainage system is found to be maintained indigenously around the wells, *Dhunge Dharas* and ponds not to allow excess water logging around them. Separate *Ghats* have been made for washing, bathing and performing religious affairs. *Pani Bhakari* (Water storing stone devices) can also be seen around many *Dharas*. Stone steps are found to be constructed to facilitate the people to reach up to the water sources. *Ghats* (spacious open spaces) are also observed around many

Dharas and ponds for bathing and other purposes. In many social trusts, local clubs and other organizations are involved in the maintenance and sanitary upkeep of them. These water sources can be seen as a confluence of religious tolerance where people from all walks of life come to perform their offerings and rituals.

Bhaktapur Development Project (BDP) initiated in 1972 with the financial assistance of Germany changed the scenario of Bhaktapur by implementing drinking water and sanitation but it draws its major flaw today in the sewerage disposal polluting the Hanumante Khola¹. Under the assistance of BDP, the conservation, repair and maintenance of many stone spouts of Bhaktapur have also taken place.

3.2 FIELD WORKS

During the detailed literature survey, list of *Hitis* and ponds in this city were collected (**Annexes: 1 and 2**). Then, preliminary field visits were done for locating the study areas. Finally, following *Hitis* and ponds were selected for the detailed study:

Hitis: Bhimdhyo *Hiti*, Aring *Hiti*, Ga *Hiti*, Pulan *Hiti* and Sundhara.

Ponds: Naag *Pokhari*, Kamal Binayak *Pokhari*, Tekhacho *Pukhu* and Sidda *Pokhari*

Semi-structured interview schedules were prepared for the *Hitis* and ponds (**Annexes-3 and 4**) and field study was carried out. Detailed fieldwork constituted observation of the systems, in-depth case studies and interviews with local elders (key informants). The list of persons contacted for general information and specific information (case studies) is given in **Annexes-5**.

3.3 LIMITATION OF THE STUDY

Dug-wells are still found in every nook and corner of this city and are still serving the household water needs of the city locals. However, they have not been included for the case studies during the research work.

As the study areas were predominantly of local Newars and the researcher is not familiar with their native language and culture, the uses and interpretations of the native terms and their cultural connotations might not be at the precise level. Since the local Newari language was all Greek to the researcher, he had to completely rely on the local interpreters for understanding the issues during the field works which curtailed his personal involvement in seeking in-depth information from the local respondents.

¹ Personal communication with Rajendra Pradhanaga, infrastructure planner, GTZ-udle.

Chapter 4: Case Studies of Dhunge Dhara

4.1 BHIMDHYO HITI

4.1.1 Introduction

This *Hiti* is located in *Ward* No. 3 at *Tajapal Tole* in Bhaktapur Municipality. It is popularly known as Bhimsen Dhara (Bhimsen spout) and is lying behind the Bhimsen temple near Dattatreya.

4.1.2 Source

It is believed that Dattatreya Temple some 100 m. east of this Hiti is built above a pond. From the northern side of this temple, plopping sound of water dropping right into the pond can be distinctly heard. However, nobody could tell anything about the source of this pond except their staunch belief on the spiritual power called *Tantrik Shakti* that has provided water in it. This pond is the source of this Hiti. 30 years before, the officials of German Development Project excavated up to 2 m depth in the eastern direction of this *Hitii* exactly in front of the historical Dattatreya temple. During the excavation, they found an earthen bowl in the shape of a cup nicely buried under the brick layers in which it was clearly written in Ranjana script not to excavate there further. In case of violation of this prohibition, the source will dry forever. The officials complied and left it as it is.

4.1.3 History of the Hiti

It is believed that this *Hiti* was constructed during Lichchhavi period. However, there is no evidence as to its origin.

4.1.4 Water Use

Earlier, it was the main source of drinking water of the local people. With the installation of piped water supply, its use for drinking water has drastically diminished. However, water of this spout is still being used for religious worship in the Bhimsen temple and nearby Dattatreya temple. Devotees take bath or make ablutions before entering into the temples. 40-50 households in this locality still rely on this *Hiti* for daily bath even today. Passers-by quench their thirst with this water. However, no one is allowed to wash the cloths inside the *Hiti*.

4.1.5 Surroundings of the Hiti

This *Hiti* is situated quite beneath the level of road and stone steps have been made to reach up to it. It is facing east and decorated with the figures of different water animals like crocodile, fish and others at its back and sides. The mouth of the *Hitii* is made like the elephant trunk. There is also a *Jaran* at the south direction which keeps ample storage of water. Two small outlets have been made in the *Jaran* to regulate the flow of water. However, only one is functioning now. Stone lining has been done on the floor. With the use of rectangular stones, the area is nicely decorated. Access to this spout has been made through stone steps from two directions, i.e. south and west. On all four sides, brick wall has been

erected and on the top layer of each wall, stone is used. Above this wall, steps of 2-3 layers can be seen. On the southern part of this spout, provision of drain has been made, though it is in poor condition now.. Stone statues of different deities including Bramha, Vishnu, Ganesh, Saraswoti, Buddhha can be seen around. Besides them, *Shiva Linga*, images of Gods like Chandra Narayan, Surya Narayan and Goddess Tumla (believed to come out during the night) are also seen around this surroundings. Though it has spacious surroundings, there is no separate Ghat for washing and bathing.

4.1.6 Management

All the ancient cultural heritages are managed, conserved and renovated by Bhaktapur Municipality. *Guthi* Sangsthan has no role at all. The ward committee with community contribution is taking charge of its maintenance in case of emergency situation. However, there is no water committee nor is there any maintenance fund. People's participation is as and when required. People gather to solve the problems. Though there is no punitive measures for water polluters, oral cautioning is in practice. However, strict prohibition is there for going down to the spout with the leather shoes on.

4.1.7 Flow and Quality of Water

There is constant water supply through this *Hiti*. There is however substantial decrease in water flow by this time. Three years ago, water flow was obstructed but municipality re-regulated it investing almost NRs. 300,000. The flow of this spout during the month of April was 0.0001 m³/sec. Water is very clean during winter. However, it turns murky during monsoon. As a common feature of *Hiti*, water through it is cold in summer and warm in winter.

4.1.8 Drainage System

Though Drainage of this system is working well not letting any water logging around. Before few years, it had failed and municipality repaired it. Now it is functioning well.

4.1.9 Cultural Aspect

Local devotees come to take the pure water from this spout every morning to worship in the nearby Bhimsen temple and Dattatreya temple. Every year, large number of devotees from nearby districts Kathmandu, Lalitpur and Kavre throng to Dattatreya temple for the worship of the lord Shiva on every Monday in the month of Shrawan and on every Wednesday in the month of Poush. Married women for the longevity and prosperity of their spouses and unmarried girls in expectation of the good partners take entire day-long fasting on every Monday of Shrawan month. They all take bath in the *Hitii* nearby. Thus this *Hiti* has immense cultural linkage due to the religious gathering in these two temples. Also during Shivaratri, devotees as far as from India come to Dattatreya temple and use water from this *Hiti* for washing and bath. It is one of the *Purbavimukh Hitii* and considered religiously auspicious. People also take bath here in the day of Janai Purnima and conclude their ritual worship of *Purwabhimukh* nine *Hitis* in this city. They believe

that this bathing will keep them far from the natural disaster as well as from diseases such as dysentery, diarrhea, typhoid etc.

4.1.10 Problems

Since there are public tapstands at every Chowk, locals pay little attention in its upkeep and care. There is no fund for its regular maintenance. In case of minor problem too, they depend on the municipality service.

4.1.11 Prospects

Local people place high value to the water of this *Hiti* which is being used for ablutions before entering the nearby temple. To make this pious water heritage intact and flowing, municipality, should join hand with the local people for its conservation. This community is made up of medium class people and there is an acute need of regular fund. So, local participation can be effective if they form a water management body soon where they will make provision for fund for its maintenance-regular or emergency making access with other external agencies as well.

4.2 GA HITI

4.2.1 Location

Ga *Hiti* is located at Golmadi *Tole*, Ward no. 7, Bhaktapur. This *Hiti* is lying about 7 m. deep down from the level of road with four different layers. Hence it is named so (since Ga denotes the meaning "deep" in Newari language).

4.2.2 Source

Local elders mention that the source of this *Hiti* is at 30 m. away from it in north eastern side. They believe that it was evolved through *Tantrik* system.

4.2.3 Water Use

This *Hiti* is used for drinking water as well as taking bath. This water is believed to cure goiter too.

4.2.5 Management

Municipality takes charge of maintenance. Earlier, cleaning and protection could be carried in the initiative of local people. Earlier, it was rehabilitated during the Bhaktapur Development Project (BDP), initiated in 1974 and funded by Federal Republic of Germany. There is no *Guthi* or agency to take care of this *Hiti* so it is lying neglected despite being a good perennial water source.

4.2.6 Water Flow and Quality

The flow of the big *Hiti* is 0.000067 m³/sec. And, the flow of smaller *Hiti* is 0.000012 m³/sec.

4.2.7 Drainage System

Through the southern corner of this *Hiti*, water is drained off through underground pipes ultimately disposing them off to the Palikhel area, some 500m. towards

south eastern direction. This wastewater is ultimately mixed to Hanumante Khola. Locals complain that after this BDP's intervention, drainage system was disrupted however it was operating earlier. Municipality has fitted water lifting machine connecting with the *Kuwa* lying nearby the *Hiti*. Thus, after the disruption of natural drainage, it is being carried artificially.

4.2.8 Surroundings of the Hiti

On both sides of this *Hiti*, big stone images of lion is lying in full erecting position. Atop the *Hiti* is the image of Narayan and beneath the *Hiti*, there is an idol of Bhagirath. On one level above, there lie the images of Mahadev and Parvati along with other deities. On both sides of it, *Shiva Lingas* are visible. This *Hiti* is facing to west from east. On the north side of this main *Hiti*, there is a *Kuwa* and provision for drainage has been made in the southern direction. Opposite to this main *Hiti*, there are two small *Hitis* on both sides facing east. The image of *Makara* (crocodile) forms the face of one of these *Hitis* and another one is broken and water doesn't flow through it now. There are artistic decorations on the different sides of them. Small gutter-like stone structure nearby serves the drainage purpose. Similarly, there is a dug-well nearby the main *Hiti* in its precinct. The ground is well decorated with attractive and artistic stone layers which are uniform in size and rectangular in shape.

4.2.9 Cultural Aspect

There is no special day of people visiting this *Hiti*. However, local elders come every morning to wash their face and even to take bath.

4.2.10 Problems

Earlier, there was water logging up to 5 m. converting the *Hiti* virtually a pond. However, with the help of machine, water is being constantly drained off. This problem is felt seriously since the start of monsoon. Local children and sometimes, passers-by may fall into it causing heavy accident since it very deep and adjacent to the busy road.

4.2.11 PROSPECTS

This is the potent source of water to the locals which can be used for drinking, bathing and other uses. The tourists roaming around the city often make a close and keen observation of this *Hiti* due to its very exquisite surroundings. So, it may serve as a good site of water heritage for eco-tourism.

4.3 ARING HITI

4.3.1 Location

This *Hiti* is located outside the main settlement of Bhaktapur city and lying to the east of Mahakali temple at Bhalachhen *Tole*, Ward No. 5, Byasi. It is situated deep down from the road surface.

4.3.2 History of the Hiti

This *Hiti* has some historical linkage with king Pratap Malla of Kathmandu who had installed an inscription in Mahakali *Pith* after the temporary seizure of different parts of Bhaktapur including Changu. He had also instituted a *Guthi* for the maintenance of this entire Mahakali area including this Aring *Hiti* allocating 1012 *Ropan*² of fertile land. Since entire Bhaktapur city was surrounded with fortified walls and was kept safe by closing the doors, the warriors led by Pratap Malla couldn't enter into the city. After the departure of King Pratap Malla from Bhaktapur, many Khadkas around Mahakali area who had assisted Pratap Malla were captured and massacred in command of Jagat Prakash Malla, king of Bhaktapur in charge of treason. Since then, the Khadkas had boycotted the worship in the Mahakali temple and also deserted using Aring *Hiti*. In 1999, they made a religious worship and restarted to pay homage to the temple.

4.3.3 Source

The source is believed to exist at the south eastern direction some 3 m. distance from this *Hiti*. During a renovation work carried out in 1999, the source had been identified. There is a small *Kuwa* at the left of big *Hiti*. The locals mention that the water coming out of this *Kuwa* constitute the perennial source of water in both these *Hitis*.

4.3.4 Water Use

This water was never used for drinking purpose. However, it was believed to have medicinal values. In the early dawn before the cock's crowing, children troubled by *Runche* were brought into this *Hiti* to wash their face. It was believed that if they were brought here for washing their face for four consecutive days, they would get rid of *Runche*. Apart from them, the devotees earlier used to make ablutions with this water and also take bath before entering to worship in Mahakali temple lying at its northern top.

4.3.5 Surroundings of the Hiti

There are two *Hitis*, one big and another smaller. The big one is *Paschimabhimukh* and has *Shiva Linga* on its both sides whereas the smaller one is lying on the left of the big one. Later, both of these *Hitis* were jointly called Aring *Hiti*. To the southern corner, there is a small pitcher-shaped *Kuwa*. There is an image of Vishnu on the top of *Hiti* and that of Garud nearby. The main gate of entrance to this *Hiti* lies in the south and the *Hiti* is deep down in the fifth floor from the ground. The floor and wall are constructed with bricks and stone and there is also a stone inscription of 42" length and 17" width.

4.3.6 Management

Mahakali Area Conservation Committee takes charge of the entire area consisting of Mahakali temple and nearby *Pati*, *Sattal* and the Aring *Hiti*. This committee organizes feast to the poor and orphans on every Sunday and Thursday. A notice board fixed in the nearby *Pati* reads "This committee requests willing devotees and

² 1 *Ropani*=0.05 ha.

pilgrims to make contributions during especial days such as birthday, important religious days, *Shraddha* etc. so that the orphans and poor of this locality can be fed twice in a week regularly. Instead, the *Bhajan Mandali* (a religious hymn-singing chorus) will sing for their prosperity and pleasure." A donation box installed there reflects the fact that some voluntary contributions collected through donation also form the part of this committee's resources. This *Hiti* was remaining as the garbage-dumping site for almost a decade. In 1999, the committee had carried out the renovation work of this *Hiti*. There is no marked change in the earlier design and pattern of the *Hiti* after the renovation. However, cement and Chinese bricks have replaced the traditional materials esp. *Danchi Appa*. This committee has maintained the minute of the meetings.

4.3.7 Drainage System

Earlier, this *Hiti* had a well-established drainage system. The water was drained off through the drainage pipes and necessary provision had been made to dispose it near the Mahakali Boarding School lying at about 1 km. distance north to the *Hiti*. The committee still carries out the cleaning of this *Hiti* time to time. Due the disruption in the drainage system, it is no longer functional today.

4.3.8 Cultural Aspect

People used to take water from this *Hiti* to worship in the Mahakali temple and devotees used to take bath before entering into this temple. Since the *Hiti* is submerged with water and heavily littered and the water supply has been made through another tapstand near the temple, it has no religious importance today.

4.3.9 Problems

Its major problem is its drainage system. Due to the non-functioning of drainage, the surroundings have remained submerged with the water coming out of *Kuwa* and thus, it is lying neglected. The surroundings are extremely polluted with the litters and human excreta.

4.3.10 Prospects

This *Hiti* has still potent water source. If it is maintained properly, this water can be used for bathing and other secondary purposes, if not for drinking. The water can equally be used for minor irrigation of the low-lying farmland where vegetables and small-scale paddy cultivation is still done. Devotees can use this water again to worship in the Mahakali temple.

4.4 PULAN HITI

4.4.1 Location

This *Hiti* is situated at ward no. 10 of Thulo Byasi, Yalachhen at the outskirts of the Bhaktapur city. This *Hiti* is lying about 3 m. beneath the ground level.

4.4.2 Source

Even the local elders couldn't furnish any information regarding the source of this *Hiti*. No attempt was made to excavate and find it till date. The yield of this *Hiti* has reduced after the construction of houses and other structures in its periphery.

4.4.3 History of the *Hiti*

This *Hiti* comes under the category of personal *Hiti* constructed to earn merits. The clearly visible and readable stone inscription shows that it was constructed on the day of *Baisakh Ekadashi* (11th day of Baisakh-April/May) in 1642 (Nepal Sambat 763) by a widow out of the money she earned by weaving cotton threads.

4.4.4 Water Flow and Quality

The water is clean. The flow is measured to 0.000022 m³/sec which is constant since 5 years.

4.4.5 Water Use

In the morning, many elders as well as other locals gather to take bath and to wash their mouth in this *Hiti*. They sprinkle water from this *Hiti* to the deities in its surroundings. Still many of the locals, after their feast, directly come to drink water from this *Hiti*. The water of this *Hiti* is believed to have digestive virtue and make the stomach lighter. The wastewater from this *Hiti* is being used for irrigating winter vegetables in the low lying area at northern side. This *Hiti* was mainly made to serve the purpose of passers-by and others who used to take shelter in the nearby *Pati* at night.

4.4.6 Surroundings of the *Hiti*

As found usual, there is an image of Bhagirath, a deity (but without blowing conch) underneath this *Hiti* and above is the joint image of Mahadev and Parvati, flanked by Ganesh and Kumar. A *Shiva Linga* is also there. The mouth of this *Hiti* is broken and recently has been plastered. On the middle of northern wall, there is a small *Jaran Hiti* (It is not functioning since 25 years).

4.4.7 Drainage System

This *Hiti* is facing to west from east and has its drainage along the northern wall which is still functioning nicely. So, no water logging is there and the surroundings are clean. This *Hiti* and Tin Dhara, another spout lying some 200 m southern east of it share the common drainage system which lies 50 m. north western side and is ultimately drained off to the farming field.

4.4.8 Management

There is no *Guthi* and no fund to maintain this *Hiti*. Since the inception of piped water system, locals hardly bother about its maintenance. Bhaktapur municipality takes care of it which has recently renovated the *Pati* lying nearby this *Hiti*.

4.4.9 Cultural Aspect

At the day of Mahaasthami, eighth day of Dashain, a group of people locally called *Hipho* bring water from Kolma *Hiti* Jhaukhel, a village outside this city at north. At the time *Hipho* march in group to bring holy water, no cattle or any other creatures are left stray around the area. Entire area through which they pass is kept clean and no clothes are found spread in the windows, balusters and other areas of the house. While the *Hiphos* return with water, they take a rest for a minute or so exactly at the head of this *Hiti*. At that time, it is believed that the water flow from Pulan *Hiti* stops.

4.4.10 Problems

Since this *Hiti* is lying very close to the busy road leading to Kamal Binayak, Nagarkot and others, the outside walls are often damaged by the passing vehicles. In the absence of regular fund of the *Hiti*, its maintenance fully rests on the mercy of municipality.

4.4.10 Prospects

It doesn't have any big prospect as it has very limited use and the flow has greatly decreased.

4.5 SUNDHARA

4.5.1 Location

This *Hiti* is situated inside the Durbar Square at Ward no. 17 of Bhaktapur. This *Hiti* is lying beneath the ground level. This is aesthetically very famous *Hiti*.

4.5.2 Source

The earlier source of this *Hiti* was Mahadev *Pokhari*, Nagarkot. Later, modern piped system was installed which started feeding water into this *Hiti*.

4.5.3 History of the *Hiti*

While constructing Thanthu royal palace to the east of Taleju temple, Goddess Taleju appeared before Jeetamitra Malla, king of Bhaktapur in his dream in one night. She instructed the king to make provision for bringing water from the Mahadev river at Nagarkot to carry out worship of Taleju in the palace daily. Consequently, water was collected from around the smaller streams originating from Mahadev mountain in a big storage. It was then diverted into a pond for necessary treatment and finally brought to the *Hitis* inside the palace through the *Raj Kulo*. This work was initiated in 1678 (798 Nepal Sambat) and in 1683 (803 Nepal Sambat), construction of Sundhara along with the pond was completed.

At the inauguration day of this Sundhara and pond, religious worship was offered to the Taleju Goddess evoking *Tantrik Shakti* and a pair of white ducks were left to flow through this *Hiti*. Legend has it that these ducks easily passed through the mouth of Sundhara turning into smaller size. They were seen swimming in the pond. This process of appearing and disappearing of these ducks could be observed till some generations of Malla period.

4.5.4 Water Flow and Quality

With the disruption of *Raj Kulo*, many *Hitis* in this city lost their natural source of water. Sundhara is no exception in this case. At present, modern piped system has been augmented with the existing infrastructure of Sundhara. Water supply through it is limited for few hours in the morning and evening for religious worship. This supply is as well not regular.

4.5.5 Water Use

The water of this *Hiti* was used for the worship of Thanthu palace. The king and queen used to take bath into this *Hiti* before leaving to have rest nearby the *Khopi* (resting room).

4.5.6 Surroundings of the Hiti

Sundhara has the head of a non-castrated he-goat as the mouth of the spout. The *Hiti* contains the figures of different animals and Gods. In front of this *Hiti*, there is a pond in the middle of which lies an image of gold-plated *Naag* with wooden pillar. Around the *Hiti* and pond, brick pavement with the stonewall surrounded by the figures of serpent is made and there are numerous figures of Gods and Goddesses. Its aesthetic grace is unique.

4.5.7 Drainage System

This *Hiti* had the good drainage system at the south-western corner. However, due to the negligence and lack of proper care, it is no longer in good condition.

4.5.8 Management

The management of this *Hiti* was closely intertwined with the management of *Raj Kulo*. The water of this *Hiti* was brought for the worship of Goddess Taleju. In the stone inscription instituted by king Jitmitra, clear rules and regulations had been envisioned for the maintenance of the *Raj Kulo*, Sundhara and pond adjacent to it. Defaulters were also subjected to punishment. The water necessary for the worship of the Goddess Taleju would get foremost preference over irrigation. During the reign of Judda Shamsheer in 1932, Brigadier Dhan Shamsheer Rana implored the prime minister for renovating the dilapidated *Raj Kulo* and made necessary arrangements for keeping the smooth flow of water into the Sundhara and other *Hitis* within the city. For this purpose, necessary expenses were borne by the government for the renovation of this *Raj Kulo*.

Today, municipality is carrying out the maintenance of Sundhara and its premises. Its employees regularly clean the surroundings.

4.5.9 Cultural Aspect

People of Bhaktapur have deep religious attachment with Sundhara. The water of this *Hiti* brought from Mahadev pond, Nagarkot was considered very pious. This water was used to worship the Goddess Taleju in the Thanthu royal palace. Before the construction of *Raj Kulo*, the priest of Taleju temple used to assign a person to

bring holy water in the morning. The person used to bring water walking all the way on his bare feet. The primary use of water brought through the *Raj Kulo* was done for this religious purpose, i.e. religious use had primary rights of this water over drinking purpose, irrigation and others. After the complete disruption of *Raj Kulo*, the practice of carrying water from Mahadev pond was in existence. Sundhara was facilitated with the modern water supply, the water flowing through this *Hiti* is considered holy and used in the worship.

4.5.10 Problems

Since the modern piped system feeding water into Sundhara often interrupts, it often compels to use the impounded pond water nearby for the religious worship in the Taleju temple.

4.5.11 Prospects

Most of the tourists visiting Bhaktapur city also pay visit to this historical and aesthetic *Hiti*. Its religious importance is still found today since water of this *Hiti* is used to worship the Goddess Taleju. Thus, It needs to be well maintained and preserved.

Chapter 5: Case Studies of Traditional Ponds

5.1 NAAG POKHARI

5.1.1 Introduction

Naag *Pokhari* is lying in Thalachhen *Tole* of Ward No. 4, Bhaktapur municipality. Earlier, the locals used to employ water from this pond for washing buffalo-skin. Hence, this pond was locally known as *Chamar Pokhari* (*Chamar* stands for skin in Nepali). Realizing the bad connotation with this name, the local people erected an image of *Naag* in the middle of the pond and it was named as Naag *Pokhari*. Earlier this pond had 9 corners but it is in rectangular shape today. In the beginning, the image of *Naag* was tall (about 5' height above water level) and the pillar (shaft) was made of wood. (Despite the vulnerability of the wooden structure being immersed into the water in many ponds, its use might be for convenience/easiness for carving different arts into it). The present day image of *Naag* image is short (about 2.5' height above water level). It is made of stone and its thickness is 5". This image is facing towards east. The bottom surface of the pond is renovated with brick lining by the municipality only 3 years ago. It is of 4' depth and is surrounded in all directions by the road. While observing the nature of stone structure, it is believed to have been constructed during Mall period.

5.1.2 Surroundings of the Pond

On the south-western corner of the pond, there is a *pati* On the west middle section outside the pond compound area, Saraswoti temple and Mahadev temple are lying. In the middle part of eastern wall, a Buddha Stupa is seen and amazingly small images of Vishnu can be spotted outside the compound of this Stupa facing east. This is the constant reminder of religious harmony between Hindu and Boudha religious sects in this area. For the entry into the ponds, there are two stone steps at the east and west directions and two more (without steps) entry points are at the south. The pond is fenced by brick-wall the top edge of which is fortified with stone layer. Aesthetic aspect in these structures is not notable.

5.1.3 Water Source

Most important structure around this pond is the Chamar *Hiti* lying on the wall of north western corner. This *Hiti* is the source of water of this pond, which used to depend on the water brought through *Raj Kulo* from Mahadev *Pokhari*, Nagarkot earlier. These days, the piped water system is keeping this *Hiti* running and water is supplied in the morning and evening which is the ultimate source of water in this pond. From the *Hiti*, water is fed into the pond through a shaft-like stone structure. As usual in other *Hitis*, a *Shiva Linga* can be observed near the *Hiti*. There is a stone inscription near this *Hiti* but its is blurred. On the wall in the west direction, only the remnant of a *Hiti* is visible.

5.1.4 Area of the pond

Its area is 6048 square ft.

5.1.5 Management

There is no enthusiastic local involvement in its maintenance. A religious *Guthi* is in operation to carry out different religious activities in this area but there is no *Guthi* for the maintenance of the *Hiti* and pond. Moreover, municipality is taking charge of frequent cleaning and maintenance works. It was renovated by municipality 3 years ago. Municipality also carried out the compound wall construction making its surroundings spacious in all directions and planting some saplings of tree.

5.1.6 Water Use

Ponds in this city were hardly used for the drinking water purpose since *Hitis* were available at every *Chowk* (corner) of the city for the drinking water. Same applies here too. However, water from Naag *Pokhari* was used in the past for cloth washing. Still these days, locals use this water for washing of dyed thread but they are prohibited to splash it right into the pond directly. This water was employed for fire-fighting in the past and still the fire-brigades fill their storage tank with this water. One local responded that if kids fell into the pond, they are bound to plunge into the murky pond. Despite its poor quality, locals use this water for inferior uses such as toilet cleaning. Each corner of this pond is entitled to each different ward. People of four wards having 50 households use this water for such inferior purposes. Recently, fish farming though in small scale is being carried out in this pond.

5.1.7 Drainage

The outlet of this pond was at the north-eastern corner. During BDP undertaking, it was installed at south eastern corner through which waste water is ultimately provisioned to drain off to Hanumante Khola. The drainage of the upper lying 'Bekhal pond', which is recently being renovated by the municipality is also mixed with this drainage. The drainage system is running smoothly. Occasionally, this pond is evacuated for the maintenance.

5.1.8 Cultural Linkage

If it stretches drought up to May/June, *Guvaju* (religious Guru) pray the Basuki *Naag*. This Nag is believed to have been protecting this city. *Guvaju* worships other deities as well and people join him en masse to meditative praying with the chanting "*Hara Hara Mahadev Pani Deu Deu* (Oh lord Mahadev ! Please, provide rain)"

5.1.9 Problem

Water is completely filthy in this pond. There is no regular source for its maintenance. Neither is there any *Guthi*

5.1.10 Prospect

The prominent use of this pond is fish farming by the local community. It is at small scale and the food supply, such as remnants of their food, flesh etc. for the fish, is made available by locals themselves. They bring small fish into the pond and fish

harvesting is done at every six months. At the day of harvesting, local people are informed and they collect fish through traditional netting system and the total amount is equitably divided among 50-60 households around the community. Around Rs. 5000 per six month is earned through it. Out of this income, sometimes the maintenance and coloring in and around the pond are carried out.

To maintain it as recreational spot with stematic plantation need to be carried out by municipality. Necessary facilities for wooden benches inside the complex can be made. A paid staff is needed for the upkeep of the pond and to deter unwarranted human intervention.

5.2 KAMAL BINAYAK POKHARI

5.2.1 Introduction

Located at the elevation of 1338 meters from the sea level at Nagancha *Tole*, ward no. 4 (nearby the Kamal Binayak bus park) within Bhaktapur city, its nomenclature as Kamal Binayak *Pokhari* is associated with an interesting event. In 1923, land survey team then headed by army personnel came to this area and asked the locals about the name of this pond. Locals gave account of this pond with historical connection, "Charumati, sister of Samrat Ashok had constructed three Chaitaya in the precinct of this pond. So, it is called Yathau Bahal or Yathau Bare." But the army-men couldn't pick the local Newari accent and observed around. They saw lotus leaves and flowers floating over the pond and termed the name of the pond as Kamal Binayak *Pokhari*. In short, it is called Kamal *Pokhari*. Due to the abundance of *Kamal* (lotus) in this pond, it was earlier known as Kamal Binayak *Pokhari*. However, lotus in this pond has disappeared since many years.

5.2.2 Surroundings of the Pond

Kamal Binayak Ganesh temple is lying east to this pond. There are three *pati* (resting spots), one lying at south western corner and two at north eastern corner. Two *Pipal* trees at the western side of the pond (one at the northwestern corner and another at southwestern corner) are found there and two new *Pipal* trees at the east direction can be seen over there. On all four directions, stone steps are constructed to make easy entry into this pond.

5.2.3 Water Source

With the disruption and ultimate closure of *Raj Kulo*, there is no source of water in this pond and only the rainwater feeds water into it. The wastewater drained from the nearby *Hiti* situated near the Kamal Binayak Ganesh temple (in which piped water flow is installed) also ultimately goes into this pond.

5.2.4 Area of the Pond

This pond is 402 ft. long and 266 ft. wide. This pond is a bit curved in shape.

5.2.5 Water Use

Locals believe that this pond was made for emergency use in the time of disaster like fire-fighting. Its use in fighting fire is still in practice today. An alignment of

canal was observed during the BDP's renovation initiating from 40-50 westward to Kamal Binayak Ganesh Mandir and stretching from north to south. 10"x8" sized bricks were found lying over there which were believed to have been used in the canal and this canal used to be irrigate the downward farmlands nearby. Still today, some low-lying paddy farms and winter vegetables are irrigated from the water of this pond.

5.2.6 Management

In the initiative of BDP, efforts had been made to manage and restore this pond. The concerned ward (ward no. 4) of Bhaktaput municipality is currently taking charge of its maintenance and upkeep. The renovation work carried out in 2001 by the municipality at the expense of NRs. 24,58,700 only included the brick lining, pavement making and stone-stepping around the pond in all four directions but it didn't include any works inside the pond and management and maintenance of source and outlet. However, municipality sweepers clean the pond surroundings daily and also clear the foreign materials floating in it.

5.2.7 Drainage

The drainage system of this pond which was earlier operating at the northern corner is no longer functioning today. With the haphazard housing construction works around, it has been blocked.

5.2.8 Cultural Linkage

Legend has it that Tola Maharani, the consort of king Pran Malla once became envious of the jewelry set worn by a common city woman. She implored the king to make such ornaments and threatened to commit suicide in case her demands were not met. Consequently, the king consented and fulfilled what she wished. When she went to the pond treading upon the lotus leaves scattered in the pond, she was drowned. This was the evidence of her non-piety of the queen. Thus, it was the age-old belief that people with pious heart wouldn't drown into the pond while going to the pond treading upon the leaves.

This pond has great cultural significance. During Indraajatra, large number of people around 120 in number all belonging to local Newars called 'Manandhar' make one round trip of this pond with a oil-fed lamp in the hand visible from distant places.

In the day of *Ghatasthapana*, first day of Dashain festival; water from this pond is brought in the early morning before cock's crowing and it is the opportune moment of bringing holy water from the pond and the auspicious religious ritual is carried with it.

In case of the death of small kids belonging to Manandhar family, the family members need to take a holy bath in this pond on third day for their spiritual purification. For the same purpose, women belonging to Bajracharya family also take holy bath in this pond on the 10th day of the death of their small children.

On the 8th day of Dashain festival, people of Bhaktapur city pay homage to Mahalaxmi *Pith* (one of the *Asta Matrikas*) and take holy bath in Kamal Binayak *Pokhari*. If drought persists long and there is either no sign of monsoon or sign of delayed monsoon, the farmers remain deprived of paddy plantation. In such situation the farmers go to Nagarkot. Priest belonging to Bajracharya (upper Newar clan having the honor to be the priest) worships the Basuki *Naag* at the north-eastern direction down the hill of Mahadev *Pokhari*, Nagarkot. Then people return to Kamal Binayak *Pokhari*. The same Bajracharya priest again worships Basuki *Naag* at north-eastern corner of this pond and a flag is offered to the pond. People revolve around the Bhaktapur city saying '*Hara Hara Mahadev Pani Deu Deu*' (chanting for rainfall to occur praying and invoking lord Mahadev).

5.2.9 Problems

With the densely clustered area, the garbage and other waste products are being dumped into this pond. So, there is a looming danger of complete disappearance of this pond with the problem of over-siltation. Fish farming was done earlier in this pond but at present no such enterprise was observed.

5.2.10 Prospects

This pond has larger space which can be promoted and managed as picnic spot whereby internal tourism can also be promoted. It needs to manage nicely for the devotees' sake by making some resting benches and other facilities. Local youths and clubs need to be serious towards its conservation to boost municipality's maintenance efforts.

5.3 TEKHACHO PUKHU

5.3.1 Introduction

This pond is situated at Tekhacho, ward No. 17 of Bhaktapur municipality. Locals mentioned that this pond was constructed in the *Parti Jagga* (fallow land). Till 20 years ago, it was virtually rendered as a dumping site of the local community. With the initiative of local people, it was reclaimed in the present state.

5.3.2 Surroundings of the Pond

The idols of Narayan in the east, Ganesh and Bhimsen in the west, Saraswoti in the north and *Shiva Linga* in the south can be observed in this pond. Stone-stepped entries are made from two sides, one from the north-western side and one from the midway of east. There was a nice garden earlier. The entire area is surrounded with the brick walls.

5.3.3 Water Source

There are two *Hitis* outside the wall of the pond which feed water into it. Nepal Drinking Water Corporation has utilized them by connecting the modern piped water supply through them.

5.3.4 Area of the Pond

The entire area covered by this pond is 6580 square ft.

5.3.5 Water Use

Local elders use this water for washing their face in the morning and sprinkle water to the images of Gods and Goddesses around it. Some others take bath. Small children use this pond for swimming during hot season. However, this pond is not very often used for washing cloths. The upper space of the pond in all directions is used by the locals to bask during sunny winter days and windy summer eves.

5.3.6 Management

The Bhaktapur municipality has taken entire responsibility of its management. The erection of compound wall and stone steps was done by the municipality. This pond is cleaned twice in a year, once in April-May (during *Sithi Nakha*, local Newari festival) and next in October month by completely draining off the water of this pond. Local people too take initiative to clean it and make it tidy. There is a collective fund to manage and maintain this pond along with the nearby *Hits* and temples. The contribution made by local social workers, businesspersons and other volunteers constitute this fund.

5.3.7 Drainage

The drainage system of this pond lies at the south-western corner and is nicely functioning still today.

5.3.8 Cultural Linkage

There is no special religious gathering in this pond and thus has no direct cultural linkage. Nonetheless, local elders come, every morning, to wash their face and even take bath and make a trip around the temple sprinkling the water to the deities around it

5.3.9 Problems

This pond is polluted with the foreign materials, mainly paddy chaffs coming out of nearby rice mill necessitating its regular cleaning. On the other hand, the committee used to lock this area from outside earlier after the morning hours. However, local people started protesting against this move citing the reason that they were deprived from offering worship to the deities in pond complex. Consequently, some idols around this pond have disappeared and it has increased the accumulation of filth around.

5.3.10 Prospects

One of the major prospects of this pond is fish farming. Besides, it can be developed as the recreation spot for the evening strollers.

5.4 SIDDHA POKHARI

5.4.1 Introduction

This pond is situated at the western outskirts in ward no. 17 of Bhaktapur municipality and in the vicinity of Bhaktapur Hospital. This pond was originally

called *Twa Pukhu* (signifying big pond in Newari) and later it was renowned as *Indra Daha*. General Bhimsen Thapa, first Prime Minister of modern Nepal named it as *Siddha Pokhari* relating the name *Indra Daha* which is still popular name to many. This pond is a natural pond believed to be in existence since the Lichchhavi period. Though there is no written inscription about the evolution of this pond, the nature of the stone of *Shiva Linga* in its complex gives evidence that it might have been of Lichchhavi period. Some ancient scripts differently mention that during the reign of the first king of Malla dynasty, Ari Malla, this pond was developed. According to one of the historical document, this pond was constructed and consecrated by king Jagatjyotir Malla in 1686 mobilizing 100 manpower for six consecutive months. In the inscription instituted by him, there was a clear mention of rules and regulations regarding its maintenance as follows: If the pond is damaged, it will be maintained by the king's successors. If somebody deliberately damaged it, he will face "Panchamahapap-five heinous crimes, i.e. killing of cow, Guru, Brahman, child and woman.

As per a legend, there was a *Tantrik* Guru in this city who got married with the woman in Thimi, nearer town of Bhaktapur city during Lichchhavi period. With the invocation and enchantment of different Mantras, he could change himself in different forms. Knowing this fact, his wife insisted him one day to show this trick before her. He told his wife that she should throw some grains of rice over his changed form, only then he can come into his human feature. Once he changed himself into the snake form, he kept on approaching his wife anticipating that she would scatter the grains over his body. However, she forget all what he had cautioned before as she saw the dreadful serpent following her and fled to her maternal home, Thimi. Consequently, he got tired and returned to this city and took shelter in a hole. Next day, with the heavy rainfall, the hole where he had taken shelter in the form of snake converted into a big pond. Thus, *Siddha Pokhari* is believed to have evolved itself. Being at the entry point of this city, people used to go to this pond, wash their face, pay homage to the deities and take rest. One day, when the residents of Thimi came in large numbers to this pond, the *Tantrik*-turned-snake residing in the pond stung one of them and he died there later. Others accompanying him ran away and then onwards, no people from Thimi dared to enter into the complex of this pond with the apprehension of being harmed again by the *Tantrik*-turned-snake. Still, people from Thimi are hesitant to go to this pond.

5.4.2 Surroundings of the pond

This pond is surrounded by a wall. One can reach up to the pond using the wide pavements and spacious stone steps. In all four directions, there are entrance gates which have good artistic decorations that remind us of the medieval arts and crafts. The complex of the pond is strewn with numerous images of Gods and Goddesses belonging to Hindus and Buddhists. There are stone steps There are four more ponds around its different directions. They are *Rani Pokhari* (west), *Bhaju Pokhari*(west) , *Nawa Pokhari* (east) and *Ancha Pokhari* (north). There is a

Shiva Linga in the eastern side of the pond. Locals believe that it was installed during the reign of Yaksha Malla.

5.4.3 Water Source

This pond has its own independent water source. Locals believe that the source of this pond is at Dhalchibasi, at the jungle of Surya Binayak and water had been brought from there with *Tantrik Shakti*.

5.4.4 Area of the Pond

It is the biggest pond in this city. It is 574 feet long and 249 feet wide.

5.4.5 Water Use

This pond was used for washing hands and feet and bathing. This was actually a religious ablution undertaken by the devotees who used to come to worship in different shrines in different religious occasions. People were, however, not allowed to take a dip into the pond nor to swim in it. Fish farming had been done during the premiership of General Bhimsen Thapa. At present, fish of different colors are kept into this pond increasing the aesthetic value of this pond. It has spacious resting places at every corner with wooden benches. It is the attraction of many people within and beyond the nation, thus, presenting itself as the site of tourism.

5.4.6 Management

Yaksha Malla had installed the *Shiva Linga* at the eastern side of this pond. King Jitmitra Malla had renovated it at the cost of NRs. 6000 in 1677. After Malla period, it was in vulnerable condition. General Bhimsen Thapa took charge of its renovation later. During his reign, a stone sidewalk was constructed and the pond was surrounded with wall from all directions. On both sides of the entry gate of the pond, he instructed to construct *Pati* so that the passers-by from remote areas could take shelter during night. For cleaning and maintenance of the pond, he had allocated some fertile land in the *Guthi* of this pond. In the stone inscription installed by Bhimsen Thapa in 1824 (Nepal Sambat 945), it is mentioned that those who steal the fish from this pond would be subject to NRs 50 as penalty.

During Rana Prime Minister Ranodeep Singh's regime, *Patris* were renovated and this pond was brought to its original condition. The renovation works and other rules and regulations were mentioned in the stone inscription of 1879. It is believed that he set up a *Guthi* for the upkeep of pond and its premises, for feeding the fish in the pond as well as for the worship of the deities. The remaining amount would go to the *Chaukidar's* remuneration who was exempted from his labor contribution.

During the reign of late king Mahendra in 1958, he forwarded the instruction to the then Bhaktapur Magistrate for its proper maintenance. However, some works were initiated in this regard, it ended unsuccessfully. Later, this pond remained deserted and consequently it remained neglected as the dumping site of many Bhaktapur denizens. In the late 1996, it again got new lease of life. The municipality cleaned, excavated and

brought it into the earlier condition. Its maintenance is now undertaken by the municipality.

5.4.7 Drainage

This pond has good drainage system which is still functioning. Water is drained through it at the western side at the time of renovation. Bhaju *Pokhari* and this pond shares the common drainage.

5.4.8 Cultural Linkage

Indrayani *Pith* lying nearby Sidda *Pokhari* is one of the *Astamatrika* which is visited by the religious people of Bhaktapur during Dashain. At the sixth day of Dashain, people take a holy dip into this pond and pay homage to Indrayani *Pith*. People come to take bath and pay homage to Indrayani in the day of Indrajaatra anticipating the salvation of the spirits of their deceased relatives. In Bhadra month (August/September), locals keep food for the crow at its south eastern corner.

5.4.9 Problems

There is no conspicuous problem in this pond

5.4.10 Prospects

Being centrally located, people visiting Bhaktapur city have easy access to this pond. So, the people from outside Bhaktapur city-be they native or foreigners-often come to see this pond. Hence, it has huge prospect of cultural tourism. Municipality can charge certain entry fee, though nominal for the natives, and this might be regular and potent source of income so as to maintain its cultural assets. The municipality is generating some income through the sale of fish. Interested people following the open call of the tender issued by Bhaktapur municipality can engage in catching fishes and carrying the fishes themselves paying the charge allocated by municipality. On the other hand, boating can be operated in this pond as conducted in the pond located inside the Central Zoo, Jawalakhel, Lalitpur whereby its source of income will increase.

Chapter 6: Evolution, Sources, Construction Motives and Functions of Dhunge Dhara and Ponds

6.1 EVOLUTION OF DHUNGE DHARA

However information is lacking, the development of *Dhunge Dhara* in Bhaktapur city can be traced as back as 800 to 1000 years. Unfortunately, there is no recorded history about earthquake, arson and other disaster that devastated the man-made structures. So, recorded history shows that the evolution of *Dhunge Dharas* and ponds dates back as far as Lichchhavi period in Bhaktapur district. Following are some *Hitis* of that period still in existence:

1. Tulutulu *Hiti* of Suryamadhi *Tole*
2. Ga *Hiti* at Golmadhi *Tole*
3. Dhauwa *Hiti* (Backside of Indrayani Pith)
4. Baku *Hiti* (South of Hanumanghat)
5. Bhimdhya *Hiti* near Dattatreya temple (Munakarmi, 1993).

Malla period was the booming period as regards the spread of these spouts. Temples resembling *Char Dhams* were constructed in the periphery of today's Durbar Square to facilitate the people so that they were not compelled to reach far to earn merits going through different ordeal. Nearby, a *Dhara* had been built by Yaksha Malla and it was used by the devotees and was popularly known as *Char Dham Dhara* (signifying four pious pilgrim spots namely Badri, Kedar, Rameshwor and Jagannath where Hindus wish to pay homage during their life).

During Malla period, adequate provision of drainage was introduced around the Dhara to ensure the disposal of waste water and to avoid water logging around the surroundings. The Dharas built during Lichchhavi period, though successfully running, were not enough to fulfil the water demand of Bhaktapur city. Realizing the impending water scarcity, King Jitamitra Malla prepared a big plan. The legend has it that he was once in a dream instructed by a deity to solve the water crisis of the city by managing water from Mahadev Khola at the foothill of Nagarkot. Later, he discussed this with his coteries and accomplices and other royal dignitaries. Accordingly, water from the Mahadev Khola was collected in a reservoir (today's Mahadev *Pokhari* is the reservoir) and it was brought to the city through the earthen canal. The water was then supplied to many Dharas in Bhaktapur. Prominent among them is the Sundhara which still serves water to Thun Thun Durbar. These *Dharas* were allocated to the specific areas based on the households and population. 24 *Toles* existing at that time were systematically supplied with *Dharas* in an appropriate proportion. The *Dharas* at Taumadi *Tole*, Nasamana *Tole* were also built during the reign of king Jitamitra. The basic planning at that time was that each *Chowk* had one *Dhunge Dhara* for drinking

water, a temple for religious worship and a *Pati* for temporary shelter. In each of the ninety nine *Chowks* in this city, there was at least one *Dhara*. Some are still functional whereas many others are only now remnants. There are still 3 to 4 spouts around Durbar square.

Later, Bhupatindra Malla, following the footsteps of his father Jitmitra, also managed old *Dharas* and built new ones and supplied water to every *Tole* thus solving the problem of drinking water considerably. Besides drinking water, this water was used to irrigate the farmers' land and cultivate paddy. Water mills were as well running where people could grind their grains. During that time, there was provision of water purification as well as source protection and conservation.

During the premiership of Bhimsen Thapa, some new *Dharas* were built and some old *Dharas* were renovated. During Rana regime, Kathmandu became the administrative center and they didn't give due attention in conserving and preserving these water heritages. Some Rana brigadiers took initiative in this regard and could partially succeed in the maintenance of these water systems. *Guthi* was responsible for the maintenance of these historical water systems. *Guthis* are the institutions formed for the conservation and preservation of public heritages like Hiti, pond, temple etc. as well as for carrying out different religious and social events. The adequate acres of fertile land were allocated for *Guthis* and the income generated through them would go to the maintenance works and social functions. Community members would also contribute cash and kind in the *Guthis*.

Before 1933, there was smooth flow of water in the stone spouts of this district and enough supply of water was available to the people. Passers-by were also equally benefited. The devastating earthquake of 1933 proved bane to this city's ancient water heritages which turned many into only ruins. The political upheaval of 1950 weakened the *Guthi* system which used to manage land and other historical and cultural heritages. The land owned by *Guthi* was mismanaged and no resources were left for the maintenance of these heritages. *Guthi Sansthan* at present has turned blind eyes towards these spouts. In some places, community *Guthi* is found where local Newars contribute voluntarily for the continuation of their religious functions and maintenance of temples, *Patis*, spouts and ponds.

The source of many *Dharas* was the *Raj Kulo*. It used to feed water into the Khauma *Tole's Dhara*, Nasamana *Tole's Dhara*, Bhairavsthan's *Dhara* and many others besides the Sundhara (inside the royal palace). After disruption of *Raj Kulo*, there was no supply of water through Sundhara and the devotees were compelled to bring holy water from Mahadev *Pokhari* at Nagarkot to worship the Goddess Taleju. After the installation of modern piped system of water supply, the water was fed into the Sundhara. This water is being used for worshipping these days³.

³ The researcher expresses deep indebtedness to Lila Bhakta Munakarmi, the historian and cultural expert of Bhaktapur, for sharing valuable information.

6.2 EVOLUTION OF PONDS

There is very scanty account about the development of ponds. Most of the ponds in this city were man-made. In many ponds, the history of construction couldn't be traced. Many ponds in this city were believed to have been constructed during Malla period. During that era, many ponds had been constructed adjacent to the *Dhunge Dhara*.

6.3 SOURCES OF DHUNGE DHARA

The water sources of Dhunge Dharas are mainly of two types; a) they used water from *Raj Kulo* b) they utilized the spring source. Most of the *Dharas* in this city were fed by the water brought from the Mahadev Khola, Nagarkot through the *Raj Kulo*. It was reported that water from different sources around Mahadev Khola were impounded into Mahadev *Pokhari* and was fed into 15 km. canal constructed by the local Newars and finally brought into different *Dharas* of this city. *Dhara* at Khauma *Tole*, at Nasamana *Tole*, Bhairavnath *Tole* and others were using the water brought through this *Raj Kulo* besides the Sundhara at royal palace. This water supply had resolved considerably the water crisis of this city. These days, *Raj Kulo* got damaged and there is no longer water supply through it. In those days, water brought through this canal was also used for the irrigation of nearby farmlands. They were also used for running water mills and in fish farming too. Thus, this *Raj Kulo* was the lifeline of the Bhaktapur people in the past.

Other *Dharas* tap the independent sources of water. They are utilizing the underground natural sources. They lie deep down the road level and access to them is made easy through steeped stone stairs and different levels. Hence, one would find the difference of level of water spouts depending on the source of water supply to these *Dharas*.

6.4 SOURCES OF DHUNGE DHARA

Ponds under this study could not find independent sources. Since many of the ponds were at the vicinity of *Dharas*, these *Dharas* were the prominent and perennial sources for them. With the disruption of age-old water distribution system through *Raj Kulo*, most of the *Dharas* today are fed through modern water supply. On the other hand, the rain water is another source of water for these ponds.

6.5 MOTIVES OF CONSTRUCTING DHUNGE DHARA AND PONDS

In the past, many social activities were undertaken under royal patronage, community effort and commoners' initiative. Besides *Dhara* and pond, contributions in making temples, *Pati*, *Pauwa*, digging wells and other philanthropic activities had been made in a self-motivated manner by the people in the society.

People had the belief that by making *Dharas*, ponds, *Pati*, *Sattal* and temples, they would earn the merit after death.

Merit earning was another driving force which encouraged high-profile royal dignitaries as well as commoners to contribute in worth remembering deeds. Yaksha Malla, Jeetamitra Malla, Bhupatindra Malla and other Malla kings were pioneer contributors in many infrastructures such as *Dhara*, pond, *Pati*, temples etc. Bhaju Kasha, a brave royal adviser made Bhaju Pokhari for earning merit as well as exhibiting his courage. On the commoners' front, a widow made Pulan *Dhara* in 1586 with the earning she made through weaving cotton thread. Gosain *Hiti* and Dhawbadhel *Hiti* were through community effort. They put the stone inscriptions mentioning clearly the do's and don'ts regarding their upkeep and maintenance.

The contribution for the construction of *Dhara*, *Pati*, *Pauwa*, temples and other infrastructure for the benefit of the common people was woven in the fabric of socio-cultural life of the people in Bhaktapur.

6.6 FUNCTIONS OF DHUNGE DHARA

Dunge Dharas were of multifarious functions. Main functions are discussed below:

Drinking water: Before the introduction of piped water system in 1896, Dharas were the important source of drinking water in this city. Their importance has decreased now and they only supplement water in the lean period before the start of monsoon.

Public bathing: Many Dharas built during Lichchhavi and Malla periods have wide space with proper drainage system. Though special bathing Ghats were not provisioned, locals could take bath in these Dharas. Many devotees could take bathing before performing worship nearby the temples. Being water directly fed into the water conduit through spring source in these Dharas, water is still cool in summer and warm in the winter.

Laundry purpose: In the past, there were separately assigned Dharas for the laundry purpose. The washermen (Dhobis) as well as local people could use these sources. They were built at the outskirts of the city. In Bhaktapur, however, such Dharas were not observed during study. In Kathmandu, there are some places named after Dhobi Dharas.

Religious function: In the vicinity of every Dhara, at least a temple for the religious offering and a *Pati* for having rest for the devotees as well as the passers-by have been made. Therefore, besides having bath and making ablutions before entering the temples, the water of these Dharas were used for cleaning the idols and religious shrines every morning. This function is still in practice these days in many shrines. The water from Sundhara inside the Durbar Square is still offered to the Goddess Taleju at Thanthu Durbar. Many Dharas in this Dharas in this city have special significance during the religious occasions. In the day of Janai Purnima, nine *Purwabhimukh Dharas* are visited by the devotees in this city.

Medicinal function: Being the natural source fed into the water conduit (unlike the use of conveyance pipes today), water possesses medicinal virtues. The water of Pulan Dhara has digestive quality and people believe that drinking water from it make them relieved and light after having heavy feast. On the other hand, Ga *Hitii* at Golmadi has the virtue of healing goitre. Similarly, small children as far as outside Bhaktapur were brought to wash their faces in the Aring *Hitii* to get rid them of Runche. Some others have the virtue of curing skin ailments too.

Irrigation use : Many *Hitis* in the past were extensively used for irrigation purpose since large number of people in the then Bhaktapur Town Panchayat (now the municipality) used to rely on agri-farming for their livelihood. The wastewater from the *Hitis* was used to irrigate the low-lying nearby farmland wisely adopting the gravity flow technique. The wide use of wastewater from the *Hitis* during the past period for this purpose can be understood from the following: "Irrigation is either through terrace irrigation, or by constructing subsidiary canals. The main wastewater drainage serves as the channel for the water flow. The water-taps, the sewerage and the drainage were identified as the sources of irrigation" (HMG/Nepal, 1983). Still wastewater from the *Hitis* as well as ponds are being used for irrigation, for example the wastewater of Pulan *Hiti* and Kamal Binayak pond. However, large farming land have been replaced by building all round thanks to the rapid pace of urbanization and such irrigation is limited mainly to the vegetables and few areas of paddy field.

Confluence of religious tolerance: Images of many deities can be seen carving in and around the *Hitii*, mainly of Hindu and Buddhist faiths. So, these serve as the sites of religious harmony.

6.7 FUNCTIONS OF PONDS

Since the Lichchhavi period, systematic development of *Dhunge Dharas* started to fulfil the drinking water needs of this city. During Malla period, *Dhunge Dharas* were installed at every corner of the city to facilitate people's drinking water need. So, hardly a single pond was found to be used for the purpose of drinking water in Bhaktapur city. However, water from the ponds was widely used for washing clothes by the local people. Water from Tekhacho *Pukhu* and Naag *Pokhari* were found to have been used for washing clothes in the past. With the frequent water supply due to modern piped system and the growing pond water pollution, very few people of Bhaktapur city don't use the water of the ponds for washing these days. But the water from Tekhacho *Pukhu* is still being used for washing the face by the local people, who come to worship the deities in the morning. In the past, ponds were basically used for fire fighting in the city. All of the ponds case-studied under this research are still being used for this purpose. Besides, these were the main source of irrigation water to the low lying nearby farm areas where gravity flow of water could be made digging small canals and ditches. Though not in large scale, fish farming was carried out in the past in many ponds in the city. Still today, this activity is being carried in Siddha *Pokhari* and Naag *Pokhari*. Thus, they have also the economic values. The open spaces all around the pond are the good recreational sites for the evening strollers. On the other hand, pond water is widely used by the locals for inferior purposes such as toilet cleaning.

Chapter 7: Water Management Practices

After carrying out the case studies of *Dhunge Dharas* and ponds in this city, water resources management in Bhakatapur city mainly dictated by ancient practices evolved from the very past were found quite unique but systematic as well as indigenous but sustaining. During Lichchhavi and Malla periods, water allocation, distribution, conflict resolution, penalty imposition and other related activities were strictly maintained through rigorous rules and regulations envisioned in the inscriptions and as well as by instituting *Guthis*. This chapter will deal with the ancient water management practices, changes over the period of time and current management modes.

7.1 ANCIENT WATER MANAGEMENT PRACTICES

7.1.1 Maintenance through Sithi Nakha

Sithi Nakha is the last festive occasion of the year among Newars. It falls on sixth day of the bright half of the month of Jeth (in the month of May). This festival is set to have been observed to mark the birth day of Kumar, the Hindu deity of war and one of the sons of lord Shiva. It is one of the main festivals to be observed by native inhabitants of the Kathmandu valley. The special feature of this festival is the cleaning of wells and springs from which people, before the supply of filtered drinking water through galvanized pipes and tapes, used to drink water (Ranjit, 2004). This very day resembles the day at which the level of water in well, pond and *Hiti* goes to the lowest level in a year. Local people en masse clean and maintain these water sources as a religious process. It is believed that in this very day, the *Naag* deities inhabiting in these sources come out of the water retaining bodies, their habitat, thus paving the way for unhindered maintenance of these water sources.

This festival reminds us the inseparable connection between human life and nature. In the bygone days, this day was considered auspicious for initiating the important construction works. In the initiative of the state, the construction of temple, *Pati/Pauwa*, fort and others were carried out. Likewise, the state had divided rules and regulation regarding the cleaning and maintenance of stone spouts, wells, ponds and local *Toles*. Since *Sithi Nakha* falls before the monsoon it is the quite opportune moment for the maintenance and upkeep of human heritages. This is still in practice (Bibash, 2004).

Lime or *Abhrakh*, a herbal medicine is added into the water sources after cleaning them and the water from these sources are not used for drinking purposes for four consecutive days. In the past, the surroundings of water sources were blocked with fences in order to prevent their uses for few days.

7.1.2 Maintenance through Guthi

Earlier, private individuals, *Gosthi* (trust) or village panchayats, religious organizations of the Hindu and Buddhists and lastly, the government agencies were the principal managing agencies for repair works and mobilization of resources (Mishra, 1993). There were different *Guthi* for different activities. The local people belonging to a particular *Tole* themselves used to establish such *Guthi*. Mainly, there were two types of *Guthi*. One is *Raj Guthi* and another is *Duniya Guthi*. *Raj Guthi* was established from the state support. Earlier kings, queens and their relatives used to build *Hiti*, pond, temples and others and institute *Guthi* for their maintenance. Such *Guthis* were called *Rajya Guthis*. *Duniya Guthi* is established by the peoples' initiative. *Jatra Guthi* (to arrange and manage the fund for festival and carnival), *Dharmashala Guthi* (for the conservation of shelter house, temple and other resting places), *Si Guthi* (for carrying out last rites) and *Hiti Guthi* (for the maintenance of *Hiti*) are important *Guthis*. After the construction of *Hiti* for the public purpose, provision for a public fund for its maintenance was made. The agricultural income from the fertile land allocated to such *Guthi* would constitute the main resources of *Hiti Guthi*. The people responsible for running such *Guthi* used to perform annual worship marking the day of the installation of the *Hiti*.

After the construction of the temple, *Hiti*, pond, *Pauwa* or others-either from the state or from the individuals' effort- a tradition of installing inscription was prevalent during Lichchhavi and Malla periods. It continued during Shah and Rana regimes too. Out of these inscriptions, many are still intact and can be read easily. They are mostly in Newari *Ranjana* script (and some are even in Sanskrit script). In these inscriptions, strict rules and regulations have been envisioned for the maintenance of the ancient glories. Sources of resource generation and criteria of punishment have also been mentioned. Besides, such inscriptions are the living documents cherishing the noble deeds of our ancestors. The *Shilapatra* (stone inscription) at the eastern wall of Pulan *Hiti* still reminds us the remarkable contribution made by a widow in constructing this *Hiti*.

As stipulated in the stone inscription of Sundhara, strict rules and regulations were devised by king Jeetamitra about the use of water for drinking purpose and irrigating in the farming areas and even for running water mills, though the religious worship in the Taleju temple would get the foremost and primary water rights. The inscription reads as follows (Wright, 1990): "The overseers of the water-course do not give water fairly to the people, therefore the following arrangement is being made. At the time of planting rice the people are to make a watercourse, and every one going to work at this, after doing a day's work, must come and get a certain royal token (to entitle him to a share of the water). He who cannot produce this token shall be fined 3 *dams*⁴, but not more than that amount. The overseers are not to levy any duties for allowing water to be taken from the channel. The rank of people is not to be taken into account in distributing the water, but every one is to get a supply in turn. If the overseers do not allow water

⁴ 1 paisa= 4 dams

to be taken in turn, the head-officer shall be fined six mohars. By obedience to the above rules Iswari will be pleased; by disobedience she will be displeased. Sri Sri Ugra Malla, Sri Sri Bhupatindra Malla, and Chautara Dukhibhagirama have assisted in making this arrangement. The 15th of Jeth Sudi, Nepal Sambat 803 (A.D. 1683)".

7.1.3 Super Natural Belief

Most of the *Dhunge Dharas* or even many ponds in Bhaktapur built during Lichchhavi era are associated with *Tantrik Shakti*, a belief in supernaturalism. Locals could excavate a little in the earlier day in their way in making *Hitis* and ponds and in the next day, there was full excavation and erection of *Dhara* or ponds. Such belief is associated with the Bhindyo *Hiti* near Dattatreya temple. During the excavation works undertaken by the experts of German Development Project some 30 years ago so as to explore the source of this *Dhara*, they went ahead towards Dhattreya temple starting from its periphery. In between the Dhattatreya temple and Bhimsen temple lying near the *Hiti*, an inscription was found lying where it was explicitly forbidden to dig further. If denied, no water would flow from the *Hiti*. Later, German experts too abandoned excavating. Instances are many where such disobeying has resulted the drying out of water sources.

7.2 CHANGES OVER THE PERIOD OF TIME AND PRESENT STATE OF WATER HERITAGES

In Kathmandu valley, Mughal general Samasuddin Ilyas had attacked the Hindu and Buddhist religious establishments and burnt whole of the city around 1336 (Mishra, 1993). The great earthquake of 1933 devastated many infrastructures of the valley. It also disrupted many water heritages of this city. Besides the damage inflicted upon the royal canal supplying water to many *Hitis* at the city, many *Hitis* and ponds were badly ruined by this natural calamity. Worsening further, the mismanagement of the resources of *Guthi* and encroachment of the land owned by *Guthi* started on massive pace later.

These days, modern water supply system is providing water at nook and corner and thus, ancient water heritages have been rendered useless with utter negligence from both community and state. Earlier, *Raj Kulo*, ponds and marshy areas would greatly contribute in the water storage and surcharge to the wells and *Hitis*. However, many buildings have been erected today encroaching the public land in which we could find many ponds, *Hitis* and others. *Raj Kulo* has been damaged beyond the level of repair. Consequently, there is an alarming impact upon the underground water storage, the only potent and perennial source of *Hitis*, wells and others (Gorkhapatra, 2004). On the other hand, the cultural means of conservation of water heritages such as through *Sithi Nakha* is no more effective since the festivity is confined within the private jubilation and in-house feasting unlike community participation for the public cause.

Bhaktapur Development Project (BDP), started in 1974, brought sea changes in the infrastructure development of the city which included the revival of the alleys of

the city with brick lining and massive sanitary development with the installation of toilets at household levels. Under this project, works had been undertaken in the following sectors to improve the living conditions of the people in Bhaktapur: Town Development Planning and Housing; Support to the Local Town Administration; Community Development; Restoration and Reconstruction; Water and Sanitation; Economic Promotion; and Landslide Protection. BDP has improved Bhaktapur's sanitary conditions by the following measures: repairing and extending the water supply system; building a modern sewerage system; paving streets, courtyards and open spaces; and constructing more than 30 public and 1300 private latrines. (Lohani and Guhr, 1985). Despite the gigantic initiative, this project couldn't manage the drainage system of this city properly. Though few treatment ponds were installed, they are not in efficient operation, and thus the drainage disposal has been mixed to the Hanumante river, consequently making the pristine river polluted enormously. Here lies the major flaw of this project.

7.3 CURRENT MANAGEMENT PRACTICES

7.3.1 Community Efforts

The political change of 1950 weakened the *Guthi* system which used to manage land and other historical and cultural heritages. Large acres of land under *Guthi Sansthan* have been encroached these days by the influential elite. *Guthi Sansthan* is passive towards such activities. *Guthi Sansthan* at present has turned blind eyes towards these spouts and with the paucity of fund, is not in a position to cope with its administrative burden. So, *Hiti* are quite vulnerable with the lack of maintenance fund that used to be earmarked earlier through *Guthi*. However, somewhere in Bhaktapur, private community *Guthis* are found where local Newars contribute voluntarily for the continuation of their religious functions as well as maintenance of these *Hitis* along with temples, *Patis*, and ponds. Many of the *Hitis* and ponds are in need of funds for appropriate maintenance.

7.3.2 Semi-government Institutions

There is a heritage branch under the Bhaktapur municipality which is keeping the updated information of all the ancient cultural glories of the city. It has kept the inventory of stone spouts, ponds, dug-wells, temples, *Pati/Pauwa* and other such heritages. Through the publication of monthly magazine "Bhaktapur" by this municipality, these cultural heritages are highlighted and their real status are brought before the public. Besides, the respective wards of the municipality are responsible to carry out the maintenance and repair of all these heritages. The meeting minutes incorporating the agenda, decisions made and others are published in different issues of the aforesaid magazine. There is a clear-cut system of allocating budget and making these cultural infrastructures intact with the best effort of municipality fund. However, with the constant changing of central government and its subsequent impact in the reshuffle of the local level representatives have retarded the pace of such maintenance.

Many of the ancient water heritages have been vanished. Some have been damaged and only their remnants are visible. Others are in vulnerable condition. The concerned bodies such as Department of Archeology and *Guthi Sansthan* need to pay due attention towards their conservation and maintenance.

Chapter 8: Major Findings

8.1 GENERAL FINDINGS

8.1.1 Dhunge Dharas

Basic features of *Hitii* in Bhaktapur can be enumerated as follows:

- 8.1.1.1 There are two main types of *Hiti*. One type consists of the artistic inscription of aquatic animal at the mouth of spout and other with a stone tank, i.e. *Jaran Hiti* to store water and some of them having multiple mouths.
- 8.1.1.2 *Hitis* are either situated at the ground level adjacent to the road or deep down the ground level. Many *Hitis* in this city fall under the latter category and can best utilize the moistures.
- 8.1.1.3 Many places are renowned after the name of such *Dhunge Dharas* like *Ga Hiti* of *Taumadhi Tole* and *Golmadhi Tole*. Though there is no remnant of *Hiti* left there, some places are still named after the *Hiti*.
- 8.1.1.4 Some of the remnants of *Hitis* can be seen at the wall of the houses (in the Durbar Square premise) or at the courtyard of the houses. It indicates that haphazard housing construction and encroachment of public land of water heritages caused them go extinct.
- 8.1.1.5 In the near vicinity of many *Hitis*, a statue of conch-blowing Bhairabh or Yaksha is observed. So, if such statues are found somewhere else, it can be believed that *Hitis* had been constructed there earlier.
- 8.1.1.6 One of the important features of *Hitis* is that water remains cold during summer and hot during winter since the source is spring.
- 8.1.1.7 With the rise in concrete jungle, many drainage systems of *Hitis* have been badly disrupted consequently leading to excessive water logging around.
- 8.1.1.8 *Hitis* used by *Dhobis* for the laundry purpose are called popularly as *Dhobi Dharas* but no such *Hiti* were observed in Bhaktapur city.

8.1.2 Ponds

Basic features of ponds in this city are described as follows:

- 8.1.2.1.1 Earlier, many ponds were built with prior observation of the site and identification of the stable source. *Siddhha Pokhari* situated at higher elevation has water round the year since it was built with proper planning.
- 8.1.2.1.2 Many ponds in this city have been built in a such way that they can employ common drainage system. *Naag Pokhari* uses the same common drainage with *Bekhal Pokhari* 400 m. upstream. Similarly, *Siddha Pokari* shares the same drainage with *Bhaju Pokhari* lying on the westside of the road near the Bhaktapur Campus.

8.2 SPECIAL FINDINGS:

8.2.1 Auspicious and Inauspicious Hitis

Hitis facing in a particular direction still bear special significance to the people in this city. Notably, *Purwabhimukh Hitis* have major values. In such *Hiti*, we turn our mouth towards west while drinking water since the mouth of them is facing towards east. These are considered religiously auspicious. There is an unique tradition of taking bath from nine such *Hitis* in the day of Janai Purnima only in Bhaktapur. Thus, such *Hitis* have great religious significance during Janai Purnima. It is believed that such bath will refrain the people from the natural calamity as well as from other physical ailments such as dysentery, diarrhoea, typhoid etc. Besides, food will be easily digested and prove nutritional to them.

Similarly, Gaijatra, the greatest carnival of Newars fall on the next day of Janai Purnima. It is believed that bath along with the prayer, worship and religious offering to the nine deities of power lying in the vicinity of these *Purwabhimukh Hitis* will liberate the hovering spirits of their deceased relatives ensuring their entry into the heaven.

During the day of Janai Purnima, the devotees start taking bath from the Surya Binayak Dhunge Dhara located on the right of Surya Binayak Ganesh and worship Surya Binayak. At last, they take bath from Bhimdyo *Hiti* and complete their worship. Though there are numerous *Purwabhimukh Hitis*, following nine are visited by the people of Bhaktapur still today in the days of Janai Purnima:

1. Surya Binayak *Dhunge Dhara*
2. Tin Dhara near Mission hospital
3. *Dhara* down the Surya Binayak (near Bhimsen Mandir)
4. *Dhunge Dhara* at Sukuldhoka Vidyapith
5. Rayathor *Dhunge Dhara* at Nasamana Bazar
6. Dhauwadhel *Dhunge Dhara* at Puwahal, Taumadhi *Tole* (personal *Hiti*)
7. Bulubulu *Hiti* at Tipukachhen *Tole*
8. *Dhunge Dhara* at Tripursundari Pith at Tulachhen *Tole*
9. *Dhunge Dhara* behind Bhimsen temple at Tachpal *Tole* (Munakarmi, 2001)

These nine *Hitis* were believed to have been built during Lichchhavi period. Most of the above mentioned *Hitis* don't have any water flow today. Only few are running whereas some have only murky water flowing through them. Regretful though, devotees in the auspicious day of Janai Purnima bring water from the home and pour the water through the spout of the *Hiti* and take a symbolic bath.

On the other, the *Uttarabhimukh Hiti* are not considered auspicious. We should turn our face to the south while drinking water through them. Since *Shraddha/Tarpan* is carried out turning our face towards south, edibles consumed in this way are considered to be inauspicious and believed to cause harm and discomfort. So, very few *Uttarabhimukh Hiti* have been constructed in Bhaktapur. Contrary to this belief, many *Hitis* outside especially in Kathmandu and Lalitpur are *Uttarabhimukh*.

Furthermore, it is believed that *Dakshinabhimukh Hiti* are very ominous and even dreaming them can prove fatal to the life.

Similarly, some *Dharas* were strictly forbidden to use for drinking water in the past. Two *Hitis* near Indrayani were among them. Legend has it that *Kasai* (so-called lower caste of Newar involved in slaughtering) used to take bath in the nearby pond after slaughtering the he-buffaloes and other animals. The pond was the source of these *Hitis* as well. Thereby, blood tainted water used to flow from the spout of the *Hitis*. That's why, this water was forbidden for drinking. According to the legend, those who caught sight of blood flowing from this *Hiti*, s/he would die instantly. The spouts of them have the image of he-buffaloes as a reminder of demon. However, with the scarcity of water, people resort to drinking water from them these days.

8.2.2 Significance of Bhagirath underneath the Hiti

Underneath almost all Dhara, image of Bhagirath can be seen supporting the conduit either in standing or squatting position. It has an intriguing legend. During Vaidic period (Era of Veda), there was drought all around. It was the reign of King Bhagirath and he engaged himself in Tapasya (meditative prayer) and invoked Ganga, Goddess of water for supplying water. However, Ganga asked, "If I descend onto the earth to supply water with huge flow, who will shoulder its massive pressure?" Later, Mahadev consented to carry the burden of shouldering the water pressure following the request of Bhagirath. However, Ganga expressed doubt saying, " Could the head of Mahadev shoulder the pressure of water?" At her ridiculous remark, Mahadev tidied up his disheveled hair and shouldered the entire mass of water flowing. Thus, Bhagirath could avert the persisting drought with his enduring effort to make both Mahadev and Ganga cooperate together. This endeavor has been developed as a cliché as *Bhagirath Prayatna* (literally, stubborn endeavor). In recognition of *Bhagirath Prayatna*, his conch-blowing statues have been installed underneath the most of the *Hitiis*.

8.2.3 Design of Water Conduit

Hitis in this city were mainly found in rectangular and square shape, some at the ground level and others deep down the surface of the road. Most of them are made of stone. However, Sundhara within Bhaktapur palace was of gold gilded structures. Its spout and the image of *Naag* erected adjacent to it were both plated with gold. The theft and weathering effect have rendered these elegant artistic structures less attractive today. Most of the spouts of the *Hiti* have *Makara*, (crocodile), an aquatic animal through the mouth of which water flows. It is a carrier or vehicle of Ganga. The back and sides of the *Hiti* are replete with the artistic carving of many aquatic animals such as serpent; frog and others. The mouths of some *Hitis* also have the heads of goat, fish, elephant and others. These signify the symbolic meaning of cohabitation and coexistence of human being with the animals. The cut-throat competition in art and craft among the kings of the valley during Malla period prompted the development of the exquisitely innovative design of *Hiti*, temple and other structures with elegant carving in and around them, making them legendary masterpieces.

8.2.4 Irrigation Linkage

Many of the *Hitis* and ponds in Bhaktapur city, in the past, were using the water brought from the Mahadev pond, Nagarkot through the *Raj Kulo* as their perennial source. Around the periphery of most of the *Hitis*, there are ponds necessarily visible. These ponds used to be in existence mainly from the wastewater of these *Hitis*. The used water of many *Hitis* after bathing and washing were used for irrigating in the low lying nearby farmlands. The wastewater of Pulan *Hiti* is still being drained to irrigate the vegetable farms. So is the case of many ponds. One can still see that small channels have been dug to divert pond water into the farm from Kamal Binayak pond. In the medieval period, there were large chunk of land which were completely used for agri-farming within the Bhaktapur city. Thus, the water of the *Hitis* and ponds were massively used for irrigation. This fact can be supported by the survey report of East Consult, 1983 which explicitly mentions Tekhacho and Pasikhel are the name of canals. It can be recalled here that Tekhacho is a pond and Palikhel area lies adjacent to Ga *Hiti* today. This report further mentions: Irrigation is either through terrace irrigation, or by constructing subsidiary canals. The main waste water drainage serves as the channel for the water flow. The water-taps, the sewerage and the drainage were identified as the sources of irrigation..... All households have irrigation facilities, rather have access to irrigation. they can apply the water in their fields as necessary and by rotation (East Consult, 1983). Thus, the indigenous practice of *Jyapu* (local inhabitants) of Bhaktapur were had effectively utilized the sewerage waste to irrigate their farmlands besides the wastewater irrigation.

With the growing urbanization today, there are very few areas left within the city for farming. On the other hand, *Raj Kulo* no longer functions today. BDP introduced arrays of programs to generate awareness as regards the health and hygiene of the people. Consequently, irrigation connection of these sources seems to have gone into oblivion today.

Chapter 9: Conclusions and Recommendations

9.1 CONCLUSIONS

As defined by eminent evolutionist Edward Burnett Tylor, "Culture is that complex whole which includes knowledge, belief, art, morals, law, custom and any other capabilities acquired by man as a member of society". Thus, culture is the guiding notion of human being in the interaction and assimilation with the society. This study comprises the detailed case documentation of five stone spouts and four ponds within Bhaktapur city to understand the traditional modes of water management in this city. These age-old practices have substantial impact in the community management of water resources. Everyone used to abide by the belief, custom, norms, values and mores and they were instrumental in conserving and preserving the ancient infrastructures and water heritages. People at large had high degree of religious and cultural significance to the stone spouts and ponds in addition to the temples.

The study findings show that these water sources used to cater the multiple needs of the people such as drinking, bathing, washing, fish farming, livestock purpose and irrigating the low-lying farmlands, especially for paddy and winter vegetables. Moreover, water from many stone spouts were primarily used for the worship of the Gods and Goddesses. Some of them were constructed on behalf of state whereas others were by the individuals and community alike. The driving forces for their construction were to earn merit and religious piety. As revealed by the study, local Newars only in Bhaktapur take bath from nine stone spouts facing towards east in the day of Janai Purnima. It is believed that such bath will refrain the people from the natural calamity as well as from other physical diseases.

The maintenance and cleaning of these water heritages were carried out through enthusiastic participation of all the people living in a particular community in the day of *Sithi Nakha*, a local festival. On the other hand, belief in supernatural power was immense among the people in the past and many of them still believe that with the only grace of mystic or supernatural power, some water heritages are functional today. In many stone spouts and ponds, *Guthis* were instituted and adequate fertile lands were allocated to them. The income of these lands used to go for their maintenance. Explicit rules and regulations had been envisioned by installing the stone inscription around them, the non-compliance of which would stringently be dealt with. Thus, the indigenous water management practices prevalent during those days were quite effective.

This study also documents that king Jitamitra Malla in 1682 constructed *Raj Kulo* (royal canal) using the source of Mahadev pond at the foothill of Nagarkot, 15 km far from Bhaktapur city. This was mainly constructed to feed water into Sundhara which was used to carryout worship of Goddess Taleju in Thanthu royal palace. Many other stone spouts in this city also used to utilize the water source of *Raj Kulo*. Besides the local farmers

used to irrigate their paddy farm by this water. Even water mills were in operation during yonder years with the same source. Thus, *Raj Kulo* was the lifeline of agrarian people in Bhaktapur. The underlying notion of the Integrated Water Resources Management (IWRM) was thus quite effectively realized even during the medieval period.

As per the study findings, many sources of stone spouts dried following the disruption of *Raj Kulo*. As a result, many of the ponds which relied on the source of stone spouts also turned non-functional. Only those spouts having their own independent sources are running today. With the installation of modern piped system during the reign of Rana premier Bir Shamsheer, water was available at every corner of the city, if not at the every courtyard of the city denizens. Consequently, the earlier sources have been left redundant. The Department of Archaeology and *Guthi Santhan* were the responsible institutions for the upkeep and maintenance them. Unlike the past days, there is neither any *Guthi* nor any regular resources nor any maintenance fund of these water glories today. Their effectiveness is par below in this regard. Municipality is taking charge of maintenance of them now-a-days.

Though some of the stone spouts have satisfactory water yield, hardly few of them have potable water for human use at present. The water quality of them has drastically degraded. If treated well with viable means, these sources can supplement the modern water supply, thus contributing for the reduction of the water stress of the city. Likewise, water retained by the pond can be used for secondary purposes such as fish farming and irrigation. These are the reasons why their intactness is of immense significance even today. On one hand, these living heritages are cultural pilgrimages for the natives because of their religious values and on the other, they are the famous tourists destinations because of their exquisite artistic design. One of the four IWRM Principles (the Dublin principles) states that "Water development and management should be based on a participatory approach, involving users planners and policy makers at all levels". To keep this spirit alive, the onus of conserving and preserving these heritages- emblem of religious and cultural assets-lies equally on the government, municipality, local clubs and NGOs as well as the local youths.

9.2 RECOMMENDATION

Dhunge Dharas and ponds in this city have still profound religious and cultural connotation. This aspect can be instrumental in enhancing their management. Some *Dhunge Dharas* in this city are still the potent sources of drinking water. So, they can be augmented to the modern piped system so as to supplement the water supply in this city, especially during lean period. Water purification is however a must before the use since many studies conducted recently have found heavy contamination there.

Like "Wetlands are no more wastelands and they have huge economic potentials", it is not prudent to neglect any water retaining bodies. The water through them is being wasted. Immediate attention need to be paid for utilizing them. On the other hand, maintaining the fragile ecosystem paying due care to the flora, we can conserve many water sources. Individual behavioral changes can bring new

impacts towards the conservation at household level. The effective practices of ancient water management systems such as envisioning strict rules and regulations through inscriptions and instituting religious *Guthi* can be integrated in the modern management modes as well. The traditional management modes of water heritages which are lying obscured to many needs to explore keeping in sight their historical relevance and cultural connotation. Such initiative will sure help generate wide notion and understanding as regards the IWRM practices. It can also help utilize the hitherto neglected and underrated but viable sources of water for irrigation and other secondary purposes. If apt mechanism of treatment is introduced, water from many *Hitis* can be equally used for drinking and bathing purposes. Thus, it is strongly recommended for concerned agencies to initiate the process of installing appropriate treatment and purifying mechanisms. Since they can be developed as the viable water sources, it will naturally reduce the water stress of this city.

This case study is the just beginning to highlight the situation of our age-old and ancient water heritages. Similar study can be pursued vigorously in the entire Bhaktapur city in the next stage. It can also be extended to assess the traditional management modes of Lalitpur and Kathmandu district.

Chapter 10: References

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Chapter 11: Annexes

ANNEX -1: DHUNGE DHARAS WITHIN BHAKTAPUR CITY

S.N.	Name or Location of Dhuge Dhara	Nos.	Tole and Ward
1.	Yakupati Narayan	1	Taulanchhe, Ward No. 1
2.	Across the road at the north of Chyamhasinh	1	Taulanchhe, Ward No. 1
3.	Near the <i>Pati</i> at Big Chaitya	1	Taulanchhe, Ward No. 1
4.	Behind Suryamadhi Dabu (towards east)	1	Taulanchhe, Ward No. 1
5.	North of Chyamhasingh pond	1	Taulanchhe, Ward No. 1
6.	Near Degaina	1	Taulanchhe, Ward No. 1
7.	Near Bramhayani Pitha (Inside the bridge)	1	Taulanchhe, Ward No. 1
8.	Near the <i>Pati</i> at Nawadurga, Dhauchhen	1	Ganchhe, Ward No. 2
9.	In front of Karunamaya image	1	Ganchhe, Ward No. 2
10.	Pond area	1	Kwathndau, Ward No. 3
11.	Outside Dharmakirti Vihar (Jonbahal)	1	Kwathndau, Ward No. 3
12.	Near the <i>Pati</i> at the north of Math	1	Kwathndau, Ward No. 3
13.	Near the <i>Pati</i> in front of School	1	Kwathndau, Ward No. 3
14.	East of Lamgal Pond	1	Kwathndau, Ward No. 3
15.	North of Lamgal Pond	1	Kwathndau, Ward No. 3
16.	Left of Pitch road (On the way to Nagarkot from Mahakali)	1	Kwathndau, Ward No. 3
17.	Right at the east of Pitch road (On the way to Nagarkot from Mahakali)	1	Kwathndau, Ward No. 3
18.	On the left of upper part of Muldhoka	1	Kwathndau, Ward No. 3
19.	Near Bhadra Art Studio, Muldhoka	1	Kwathndau, Ward No. 3
20.	North corner of Pond	1	Thalanchhe, Ward No. 4
21.	In front of Mahalaxmi temple (to the right)	1	Thalanchhe, Ward No. 4
22.	In front of Dattatrya temple (to the	1	Tachpal, Ward No. 1

	left)		
23	Opposite to Bhimsen temple (Purwabhimukha)	2	Tachpal, Ward No. 4
24	At the north corner of Salanganesh Pond	1	Tachpal, Ward No. 4
25	Behind the Salaganesh (in the right side)	1	Tachpal, Ward No. 4
26	Patinga (There is a stone inscription of Nepal sambat 624)	2	Inacho, Ward No. 4
27	Wanchutwa (At the downward slope)	1	Inacho, Ward No. 4
28	On the way to Chorcha from Thalanche (at right side)	1	Inacho, Ward No. 4
29	Near Maheshwori Pith (near the small bridge)	1	Inacho, Ward No. 4
30	Near Maheshwori Pith (near the bridge at the west)	1	Inacho, Ward No. 4
31	Palikhya	1	Golmadhi, Ward No. 7
32	Ga <i>Hiti</i>	2	Golmadhi, Ward No. 7
33	At the downward slope of Yata (at right side)	1	Golmadhi, Ward No. 7
34	On the way to Hanumanghat at Yata (Before reaching the Mosque)	1	Golmadhi, Ward No. 7
35	Right of Tripursundari Pith (Purwavimukh)	1	Tulanchhen, Ward No. 8
36	At the chowk of Karmacharya family (Purwavimukh)	1	Tulanchhen, Ward No. 8
37	At the left side of Balakhu Ganesh (in front of the wall)	1	Tulanchhen, Ward No. 8
38	At the left side while going to east downward from Jagannath temple (Purwabhimukh)	1	Tibuknchhen, Ward No. 8
39	Behind the Bhui Sahu's house (at the Chowk) (Purwabhimukh)	1	Tibukchhen, Ward No. 8
40	Right of Chandeshwori temple, Chasukhya	1	Tibukchhen, Ward No. 8
41	Left of Chandeshwori temple (A bit below)	1	Tibukchhen, Ward No. 8
42	Near the Pitched road (from Hanumante river to Arniko Highway)	1	Wasikacha, Ward No. 10
43	To the west of Pitched road (from Hanumante river to Arniko Highway)/ At the <i>Sattal/Pati</i> on the way to Chupinghat	1	Bhelukhel, Ward No. 10
44	While descending to Damlacha	1	Yanchhen, Ward No. 8
45	Near the residence of Sanjus, Lalanchhen	1	Yanchhen, Ward No. 8

46	Behind the Chhuma Ganesh Temple	1	Chonchhen, Ward No. 8
47	Near the Stone Steps of Mahakali Pith	1	Byasi, Ward No. 7
48	At the west side of Mahakali Pith	1	Byasi, Ward No. 7
49	East of Small Industry area	1	Byasi, Ward No. 7
50	At the Northern West corner of Small Industry area, Dopat	1	Byasi, Ward No. 7
51	On the way while entering to Indrayani Pith	1	Khauma, Ward No. 12
52	Just in front of Indrayani Pith	1	Khauma, Ward No. 12
53	Behind the Indrayani Pith	1	Khauma, Ward No. 12
54	On the right side wall of Balakhu Ganesh	1	Durbar Square, Ward No. 13
55	Near the School gate (South) of Balakhu Ganesh	1	Durbar Square, Ward No. 13
56	Near Chyansin Dega	1	Durbar Square, Ward No. 13
57	Lun <i>Hiti</i> (with the water tank (Jaran) of golden mouth)	1	Durbar Square, Ward No. 13
58	Kumari Chowk	1	Durbar Square, Ward No. 13
59	Behind Taleju temple at Jaran Chowk	1	Durbar Square, Ward No. 13
60	At Malati Chowk (Art Museum)	1	Durbar Square, Ward No. 13
61	On the eastern wall of Tarachhen Baha (Inscription of Bajra)	1	Sakotha, Ward No. 8
62	Left of Bhairavnath temple	2	Taumadhi, Ward No. 8
63	Ga <i>Hiti</i>	1	Taumadhi, Ward No. 8
64	Across the bridge at Ram temple (Now, in front of furniture enterprise)	1	Bolanchhen, Ward No. 14
65	Bulbul <i>Hiti</i> , Bulacha	1	Bolanchhen, Ward No. 14
66	Near dawali (at main road)	1	Nasamana, Ward No. 14
67	In the upland area of Indra Prasad Sahu (Purwabhimukh)	1	Nasamana, Ward No. 14
68	Left of Barahi Dhyochhen	1	Tekhacho, Ward No. 15
69	In the left while climbing up towards the Gate	1	Bharwacho, Ward No. 17
70	South of Gate (Purwabhimukh)/Beneath Bansghari at damaged <i>Pati</i>	1	Bharwacho, Ward No. 17

71	North of Gate(Purwabhimukh)/East of Bhaktapur M. Campus	1	Bharwacho, Ward No. 17
72.	East of Gate (In the downward slope in front of Ganesh Primary School) (Purwabhimukh)	1	Bharwacho, Ward No. 17
73	North east of the Gate/East of Ganesh temple (Purwabhimukh)	1	Bharwacho, Ward No. 17
74	In the intersection between new and old road linking Bhaktapur with Kathmandu	1	Sallaghari, Ward No. 17
75	Chwanga Ganesh	1	Sallaghari, Ward No. 17
76	Near the Barrack on the way to Muldhoka Kharipati	1	Sallaghari, Ward No. 17
77	Chardham Dhungedhara (Balmandir/Durbar square premise)	4	Layaku, Ward No. 13
78	In the left side of Sallaghari-Nagarkot road (Near the trail at Duwakot)	1	Sallaghari, Ward No. 17
79	At the south of Byasi (<i>Dhunge Dhara</i> in which piped water supply is running now)	1	Byasi, Ward No. 7
80	Dekoy (First turning left of Changu Pitched road)	1	
81	Near the quadra-section while going to Mahakali Pith from Bholachhen	1	Bholachhen, Ward No. 14
82	At the left side of Byasi to Jhaukhel	1	Byasi, Ward No. 7
83	Near the pilgrim spot (Inside the bridge) while going to Jhaukhel from Byasi	1	Byasi, Ward No. 7
Total		87	

Source: 'Bhaktapur' monthly, Mangsir, 2051 Bikram Era (1994), Issue 1, Year 13.

ANNEX-2: PONDS WITHIN BHAKTAPUR CITY

S. N.	Name of Pond	Ward No.	Area (L*B)	Direction-wise prominent objects			
				East	West	North	South
1.	Chyamasingh Pukhu	1	70'*30'	School	Ring Road/House	Road	Farmland
2.	Jenla Pukhu	2	45'*40'	House/Road	House	House/Road	Road
3.	Salan Pukhu	3	135'*35'	House	House	Road	Pati(Resting Place)
4.	Lamaga Pukhu	3	100'*40'	Road	Ground/School	Road	Ground
5.	Bekha Pukhu	4	89'*63'	Upland	Hiti/Road	Road	Upland
6.	Kwathandau Pukhu	4	175'*60'	Road	Chaitya	Road	Road
7.	Yatu Bahare Pukhu	4	300'*125'	Pati/ Temple	Road	Pati/ Temple	Road/Pati
8.	Gwanga Pukhu	4	80'*30'	Wall	Wall	Hiti/Road	Road
9.	Bhola Pukhu	5	100'*60'	Road/Pati	House	Road/House	Road
10.	Naag Pukhu	5	84'*72'	Road	Road	Road	Road
11.	Ancha Pukhu	5	76'*49'	Farmland	Sattal	Sattal	Hiti
12.	Khancha Pukhu	6	158'*38'	Hiti/Road	Road	Road	House
13.	Nhad Pukhu	7	40'*40'	Farmland/House	Road	School/Road	Public Land
14.	Galasi Pukhu	8	50'*30'	Recently, brick lining			
15.	Yalanchhe Byasi Pukhu	10	93'*59'	Road	Road	Road	Road/ Temple
16.	Byasi Pukhu	10	39'*35'	Road/House	Road	Chowk	Road
17.	Byasi Pukhu	10	32'*20'	At present, there is a school.			
18.	Laiko Pukhu	11	40'*30'	Road/House	House	House	Road/House
19.	Kumari Pukhu	11	110'*30'	Pipal Bot	Pati	Upland	Road
20.	Khyo Pukhu	11	47'*25'	Road	Road	Road	Road
21.	Dui Cha Pukhu	11	40'*40'	At present, there is a school.			

22.	Mangalachhe Pukhu	13	32'*25'	House	Temple	House	Hiti
23.	Bhanda Pukhu	13	100'*80	Police Beat	Patil/ Ground	Police Beat	Road
24.	Degamana Pukhu	14	34'*34'	House	Road	House	House
25.	Mangaltirtha Pukhu	14	50'*40'	Road	Farmland	Public Land	Farmland
26.	Indrayani Pukhu	15	90'*40	Public Land	Farmland	Road	Farmland
27.	Indrayani Pukhu	15	35'*35'	Public Land	Upland	Road	Farmland
28.	Byasi Pukhu	15	15'*15'	At present, there is no pond and it is replaced by Buspark			
29.	Kaldaha Pukhu	15	17'*17'	Farmland	Farmland	Farmland	Farmland
30.	Machaphong a Pukhu	15	-	Farmland	Public Land	Road	Farmland
31.	Tekhachon Pukhu	16	94'*70'	Road/ School	Road/ House	Road	Farmland
32.	Na Pukhu	17	431'*250'	Road	Road	Public Land	Road
33.	Ta Pukhu	17	574'*249'	Road/ Hospital	Ground	Ground	Road
34.	Bhajuya Pukhu	17	460'*367'	Campus Road	Farmland	House	Campus
35.	Rani Pukhu	17	-	Ground	Army Quarter	Army Quarter	Patil/ Road

Source 'Bhaktapur' monthly Srawan, 2050 Bikram Era (1993), Issue 9, year 12.

ANNEX-3: SEMI-STRUCTURED INTERVIEW SCHEDULE (FOR DHUNGE DHARA)

A. General Information

1. Name of *Hiti*
2. Local name and meaning (if any)

Location

Tole: _____ Ward no.: _____

B. System Information

1. History of the system
 - a. Who constructed?
 - b. When it was constructed?
2. Water source
 - a. Where is the source?
 - b. How is it carried?
3. What are the uses of this water?
 - a. Bathing
 - b. Drinking
 - c. Irrigating nearby farms
 - d. Religious worship
 - e. Fishing
 - f. Others
 - g. None
4. Surroundings
 - a. How is the *Hiti* decorated?
 - b. What are the images of Gods and Goddesses around
 - c. Steps, railings, pavements
 - d. Other structures
5. Drainage
 - a. Where is the drainage?
 - b. Is it functioning well?
 - c. Is there any water logging around?
 - d. What is the reason of water logging?
 - e. How frequent does it occur?
 - f. Who intervenes in such case?

C. Management Practices

1. Is there any committee that manages the *Hiti*?
2. Is there any maintenance fund?
3. If yes, where is it deposited?
4. What are the sources of fund
5. Any Guthi in operation?
6. Cleaning and system upkeep
 - a. Who does?
 - b. How frequently is done?
 - c. Is this Hiti Cleaned during Sithi Nakha?
7. Any inscription installed envisioning rules and regulations for maintenance?
8. Is there any punishment for water polluters?

D. Cultural aspect

1. Does this *Hiti* has any religious/cultural value?
 - a. Yes
 - b. No
2. If yes, when the devotees come to worship here?
3. Any *Tantrik* belief in the evolution of the *Hiti* ?

E. What changes have you observed over the period of time?

F. What are the serious problems this *Hiti* is facing?

G. Are there any prospects of this *Hiti*?

Name of Respondent(s)

- a.
- b.
- c.

Name of Facilitator

Date of Interview

ANNEX-4: SEMI-STRUCTURED INTERVIEW SCHEDULE (FOR TRADITIONAL POND)

General Information

1. Name of pond

2. Local Name (if any)

3. Location
 - a. Tole
 - b. Ward no.

4. Objectives of the pond
 - a. Cloth washing
 - b. Sanitation
 - c. Bathing (regular or religious)
 - d. Fire fighting
 - e. Storage for irrigation
 - f. Storage for water supply
 - g. Livestock use

5. Type of pond
 - a. Natural
 - b. Man-made

6. Ownership
 - a. Privately owned
 - b. Religious institution (temple) owned
 - c. Local institution (municipality) owned

7. Area covered

System Information

1. Source of water

2. Who constructed?

3. When constructed?

4. Historical facts/legends

5. Uses
 - a. Past uses
 - b. Present uses

6. How water is fed into the pond?
7. Source and inlet condition
8. Drainage system/Outlet condition
9. Water quality
10. sanitation condition
11. Problems at present
12. De-silting/cleaning frequency
13. Maintenance
 - a. Cultural practices
 - b. Others
14. Any community effort initiated for conservation and restoration of pond
15. Integrated water use
16. Punishment for water polluters
17. Cultural perspective
 - a. Time of religious visit
 - ii. Idols around and their significance

Name of Respondent(s)

- a.
- b.
- c.

Name of Facilitator

Date of Interview

ANNEX-5: THE LIST OF PERSONS CONTACTED

For General Information

Mr. Lila Bhakta Munakarmi, historian and cultural expert of Bhaktapur

Dr. Purushwottam Lochan Shrestha, historian and lecturer at Bhaktapur Campus

Mr. Om Prasad Dhaubhadel, employee at Tourism Section, Bhaktapur municipality and occasional writer on historical and cultural issues

For Specific Information (Case Studies)

Bhimdhyo Hiti: Mr. Rajaram Shrestha, Chairman, Dattatreya Rash Bhajan Mandal; Mr. Laxmi Narayan Kapali, priest at Bhimsen temple ; and Mr. Jagadish Ulak, petty businessman

Ga Hiti: Mr. Babu Kaji Manandhar, grocery owner; Mr. Kula Ratna Silpakar, carpenter and Mr. Ash Bahadur Lage, farmer

Pulan Hiti: Mr. Kul Bahadur Duwal, farmer and Mr. Gyani Prasad Bashukala, farmer

Aring Hiti: Mr. Krishna Prasad Datheputhe, chairman, Mahakali Area Conservation Committee and Mrs. Chandra Kumari Dhakal, caretaker, Mahakali temple

Sundhara: Mr. Lila Bhakta Munakarmi; and Mr. Om Prasad Dhaubhadel

Naag Pokhari: Mr. Asta Buddha Ranjitkar, farmer; and Mr. Badri Narayan Gainju, student

Kamal Binayak Pokhari: Mr. Padam Bahadur Manandhar, ex-employee of survey department and cultural enthusiast; and Mr. Sri Krishna Shrestha, employee at ward no. 4, Bhaktapur municipality

Tekhacho Pokhari: Mr. Krishna Prasad Sandha, chairman, Tekhacho Tole Conservation Committee; and Mr. Mahendra Silpakar, farmer

Siddha Pokhari: Mr. Lila Bhakta Munakarmi; and Dr. Purushwottam Lochan Shrestha

