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NEWS UPDATE

Breakthrough of 12 Km Tunnel of Bheri-Babai Diversion Multipurpose Project

On April, 16th, 2019, Rt. Honorable Prime Minister KP Sharma Oli has witnessed the breakthrough of 12 Km tunnel of Bheri-Babai Diversion Multipurpose Project (BBDMP) on the bank of Bheri river in Bheriganga village municipal ward 11 of Surkhet District in a special program. On the occasion, Prime minister greeted all the personnel involved in the work whose hard work makes it possible to accomplish the work one year prior to its intended completion date. PM Oli expressed his concern for timely completion of whole project and also expressed that the concerned provinces (Karnali and Province 5) should take benefit from the project as much as possible. He thanked everyone for their contribution in the Project which eventually helps for the prosperity of entire Nepal, particularly the Karnali Province. On the same occasion, honorable minister of Energy, Water Resources and Irrigation, Mr. Barsha Man Pun, expressed his happiness for the successful completion of difficult tunneling portion of the project using Tunnel Boring Machine (TBM) technology, the first of this kind in the country. During his speech minister Pun also mentioned that the project will bring prosperity and economic development in both the concerned provinces i.e. Karnali and Province No. 5 through the year round irrigation and electricity generation. Further, he also mentioned that about 49 per cent of the investment share will be sought from local people to the project with a view to have sustainability of the developed infrastructure. During the program, Honorable Chief Minister of Karnali Province Mr Mahendra Bahadur Shahi expressed his happiness for the successful completion of tunneling work which will serve thousands of agriculture land in Province No. 5, but he wished for the same level of benefit of his own Province as well through the hydro-power part of the project. Honorable Chief Minister of Province No. 5, Mr. Shankar Pokharel in his speech mentioned that he is ready to extend cooperation between two corresponding provinces for sharing of benefit and other development activities.

US Ambassador to Nepal Randy Berry and Chinese Ambassador to Nepal, Hou Yangqi, expressed their happiness for the successful accomplishment of the difficult part of the mega project. Both expressed that they are always willing to take part in the development activities in Nepal and wish for the prosperous Nepal.

During the speech, Director General of Department of Water Resources and Irrigation Ms. Sarita Dawadi, mentioned that the tunnel breakthrough using TBM in Bheri-Babai Diversion Multipurpose

Highlights of the Issue

Editorial

Concept of Inter Basin Water Diversion

The concept of infrastructure development of diversion of water from water surplus basin to water deficit basin to support year round irrigation facilitates was formulated since six decades ago. Sunkoshi-Marin Diversion and Sunkoshi-Kamala Diversion were conceptualized initially, but due to the lack human resources and sufficient budget, these project were not realized actually. Water Resources Strategy, 2002 and National Water Plan, 2005 emphasized the need of such diversion projects to feed the vast agriculture land of terai region year round. The primitive level of studies i.e. pre-feasibility and feasibility were carried out for some of these projects during 2000's.

From a half decade ago implementation of first inter basin water transfer project was started formally as Bheri Babai Diversion Multipurpose Project in western Nepal, with a view to carry out certain portion of water from water surplus Bheri river to water deficit Babai river by digging 12 Km tunnel through Chure mountain. The Tunnel Boring Machine (TBM) was used in the project for the first time in Nepal and also in very fragile Chure mountain.

Now, with the success of Bheri-Babai Diversion Project, the Department of Water Resources and Irrigation has initiated the work for half a dozen of inter basin water transfer projects across the country from east to west. Sunkoshi-Marin Diversion Multipurpose Project in central Nepal will expected to start from this fiscal year. The Detail feasibility study of Kaligandaki-Tinau Diversion is about to finalized and the feasibility study of Madi-Dang Diversion is being carried out by the department. The pre-feasibility study of Tamor-Chisyang diversion project is going to start very soon.

With the implementation of these projects, most of the agriculture land in Terai will get year round irrigation and thereby increase the productivity and production of agriculture goods. It will surely help to make Nepal developed and prosperous.

Other outcome of these projects are production of hydroelectricity, establishment of agriculture related industries to enhance employment opportunities. The inter basin water transfer not only improve the irrigation situation, but also improve ground water recharge of Terai. These projects create healthy environment for tourism and also help to reduce risk of flood during monsoon in water surplus basin.

So the implementation of inter basin water transfer project will lead the country to prosperity and will support the vision of "Prosper Nepal – Happy Nepali".●

Project is a mile stone in the history of Irrigation and Hydropower infrastructure development in Nepal. She urged that the success of this new technology will gear up the tunneling works in all over Nepal not only in Irrigation, but also in the other sector of infrastructure development

About 5 m diameter tunnel will carry 40 cumecs of water from Bheri river to Babai and thereby irrigates about 51,000 ha of land in Banke and Bardia district. On the way, 47 MW of electricity will be generated which will be supplied to public through national grid. The cost of the project has recently been revised toNRs 33 billion and expected to be completed within four year.

Project Director of Bheri Babai Diversion Multipurpose Project, Mr. Sanjeeb Baral mentioned that after the completion of the tunnel breakthrough, most difficult part of the project has been accomplished and project has entered into its second phase. The phase includes the construction of 114 m long dam across the Bheri river and construction of power house at Hattikhal of Surkhet on left bank of the Babai river. He mentioned that the hydro mechanical and electro-mechanical works will be initiated from the beginning of next fiscal year (FY 2076/77).

The tunneling work by TBM had been completed one year prior to the intended completion date. The average progress of tunneling was 62 meter per day (790 meter per month). The project was concerned about the stretch of Main Boundary Thrust zone and High Over burden zone around (6 and 10 Km respectively) however with the successful passing through these two zones makes TBM to complete the task well before expected.

Well before in January, 2014, Prime Minister late Sushil Koirala laid foundation stone of the Project. The tunneling work has been started on 6th November, 2017.

66th Anniversary and Irrigation Day 2075 Celebrated

On April 7th 2019, 66th anniversary of Department of Water Resources and Irrigation (DWRI) was celebrated with organizing various activities. On the occasion of Irrigation day 2075, a special function was organized in the main hall of the department. Honorable Energy, Water Resources and Irrigation Minister Mr. Barsha Man Pun and Provincial Chief of Province No.2 jointly inaugurated the ceremony by watering a plant. Honorable Minister Mr. Pun, from the seat of chief guest in his inaugural speech,

expressed pleasure with the recent enthusiastic progresses in the field of irrigation and disaster management. He expected the entire employee would be mobilized with great motivation to develop multipurpose and large irrigation infrastructures to extend irrigation facilities to the farmers for increment in food and other agricultural production. He emphasized on infrastructure development in energy and irrigation sector with the people participation. He also mentioned about the necessity of new vision for the development of irrigation sector being responsible with people. In consequence, special guest of the program and the honorable chief of Province No 2, Mr Ratneswhar Lal Kayastha emphasized on quality irrigation services for enhancing agriculture production and raise the economic situation of the nation. On that occasion, Secretary, Dr. Sanjay Sharma expressed the need of speedy development activities in irrigation sector for sustainable development work to improve food security in the nation.

On the occasion Mr. MadhavBelbase, Joint Secretary, Water and Energy Commission Secretariat, President of Society of Irrigation Engineers of Nepal (SIREN) Mr. Sharada Prasad Sharma, Mr. Gajadhar Yadav, Chairman, Federation of Water Users' Associations in Nepal, Joint Secretaries of Ministry of Energy, Water Resources and Irrigation and Former DGs of DWRI were also present as special guests. The program was chaired by Director General of Department of Water Resources and Irrigation Ms. Sarita Dawadi. DG Ms Dawadi thanked to chief guest and honorable Energy, Water Resources and Irrigation Minister and special guests for their presence in the function to make it successful.

On the occasion, the best performing irrigation system Water User's Association title was awarded to Water User's Association of Narayani Irrigation System Block 2 of Hariharpur Parsa District., Former DG of the Department and honorable chief of the province No. 2 Mr. Ratneshwar Lal Kayastha was honored with Life time Achievement Award for his untiring service rendered to the development of irrigation sector of Nepal. Bheri Babai Diversion Multipurpose Project Office was awarded for its best performance during fiscal year 2074/75. Similary, Mr. Hari Ram Shrestha, Project Director of Sunsari Morang Irrigation Project, Biratnagar Mr. Suresh Kumar Sharma, Senior Divisional Engineer of DWRI, Mr. Basudev Dahal, Under Secretary of DWRI and Mr. Rajendra Prasad Sah, Chief of Narayani Irrigation Management Office, and other high ranking officials of DWRI, Engineers, Section officers and Accountants are honored as best employee of the department. Employees those got compulsory retirement were also honored on that occasion

Various other events including blood donation were also organized for the celebration of Irrigation Day. Honorable Minister visited the demonstration stalls and curiously attended the exhibitions of various solar pumps for irrigation. Renowned companies supplying solar pumps, non conventional irrigation apparatus and accessories of the Kathmandu valley participated in the exhibition.

A morning procession was also organized in the morning of 8th April, 2019. High ranking officials from the department including the Director General, participated the procession. The procession bearing placards with irrigation related slogans took course from Maaitighar Mandala – Kopundole– Krishnagalli– Pulchowk and ended at DoI premises.

Progress update of National Pride Projects

Bheri Babai Diversion Multipurpose Project (BBDMP) is one of the national pride projects of Nepal. This is one of the project with sole investment of Government of Nepal. The project began its construction from 2014 after signing contract agreement between Department of Water Resources and Irrigation and A Chinese overseas engineering company named COVEC. Tunnel Boring Machine (TBM) started digging 12.4 Km long tunnel of as the part one of the project on 6th November, 2017, despite of geologically unstable part of Siwalik range. The work was successfully accomplished on April 16th 2019 with its last attempt in breakthrough ceremony. In the first phase 33 per cent of total work has been completed. The second phase of the project started with three major parts as construction of 114 m long headworks dam on the Bheri river at Chiple of Surkhet district with electromechanical and hydromechanical parts of work will be done after construction of power house at hattikhal of surkhet.

Rani Jamara Kulariya (System Modernization) Irrigation Project is also a national pride project. The project is one of the largest irrigation system operated by water users situated in the western part of Nepal. The construction of gated side intake on the left bank of Karnali river near the bridge over Karnali in Chisapani, Kailali district, has been almost completed. 95 per cent of main canal construction of 14,300 ha system has been accopmplished yet. In addition 1.45 Km of main canal construction has been completed during last six month. The protection of irrigated area for 9.65 Km has been completed so far during the mentioned period. New branch canal of Lamki upto 9.75 Km has also been achieved through the period. With this achievement, 200 ha of new agriculture area has been provided with irrigation facility. Similarly, distribution of land compensation for 13 ha of land acquisition has been done in the period.

The next national pride project is Sikta Irrigation Project. The construction of the project is started during FY 2007/08 with a view to irrigate 33,766 ha of agriculture land in Banke district. In Fy 2014/15 additional 9,000 ha of land on right bank of Rapti river was also included in project with the total area extension to 42,766 ha using the same source. Till now 317m long headworks barrage on the Rapti river and 45.25 m long main canal network with desilting basin at wetern bank of the river has been accompolished. Canal and irrigated area protection work against Rapti, Paruwa, Duduwa inundation during rainy season has been done with canal service road along the main canal.

Due to problem of soil on canal bed and embankment at chainage 26+294 near Jhijhari aqueduct has been breached on June 28th of 2016 and the immediate action was taken to repair the defective part. Consequently, with the same nature of problem soil caused canal breach during its operaion at chainage 22+950 near Changai stream on July 23 2018. Various committees carried out investigation on the defect of canal. The investigation team formed including international expert concluded the defect was due to use of problem soil. After the approval of budget and work by Ministrial council of Nepal, repair and construction of work has been started with various remedy measures from the end of June 2019.

TRAININGS/WORKSHOPS/SEMINARS

Refresher Training for WUAs Organized

Refresher trainings were organized for the officials and personnel of Water Users' Associations (WUAs) of five different Irrigation Systems from June 6th to 21st, 2019, with a view to reform and necessary modification on modality of working for effective continuity of strengthened organization for sustainable institutional development.

For two day long training for each WUA, courses covered were on Capability built up of WUAs, Working modality of WUA through Statutory Accords, Periodic Election of WUA Executives, Canal operation and Maintenance, Resource collection and mobilization, transfer of ownership of property. It was expected to motivate the participants to make necessary changes in their working modality while carring out various WUA strengthening activities. There were thirty participants from each WUA including members of executive body and office staffs.

The refresher training events started from Rajapur Irrigation System, Bardiya. The training was held at meeting hall of Krishnasar Resort of Gulariya for 6th and 7th of June, 2019. The program was chaired by the chief of Babai Rajapur Irrigation Management Office(BRIMO) Mr. Tej Rijal. Mr. Rijal expressed that the capacity of the participants will be enhanced through the training and wished the success of the training . Er. Prabesh

Khanal of BRIMO welcomed all the participants of the program. Senior Sociologist of Department of Water Resources and Irrigation(DWRI) Mr. Gauri Lal Upadhyay in his speech discussed about the importance of training, course content and design . Resource person of the training program were Mr. Bashudev Lohanee, Deputy Director General of DWRI, Mr. Tej Rijal, chief of BRIMO, Mr Gauri Lal Upadhyay, Senior Sociologist of DWRI and Er. Prabesh Khanal of BRIMO.

The training for WUA of Patharaiya Irrigation System was held at meeting hall of Hotel Highway Plaza of Tikapur from 9th to 10th of June, 2019. Inaugural session of the program was chaired by the Chairman of Patharaiya Irrigation System WUA, Mr. Prem Bahadur Chaudhary. Chairman Mr Chaudhary welcomed all the participants and wishes training program will benefit all the participants. Mr. Bashudev Lohanee, Deputy Director General, inaugurated the training program and wishes for the success of training and assumed effective capacity development among the participants after the training program. Senior Sociologist of Department of Water Resources and Irrigation (DWRI) Mr. Gauri Lal Upadhyay in his speech discussed about the importance of training program, course content and its design. Resource person of the training program were Mr. Bashudev Lohanee, Deputy Director General of DWRI, Mr. Rupesh Bhattarai, chief of Mohana Patharaiya Irrigation Management Office (MPIMO), Mr Gauri Lal Upadhyay, Senior Sociologist of DWRI and Er. Kul Raj Chalise of MPIMO.

The training for Mahakali Irrigation System WUAs of first and second phase was held at meeting hall of Hotel Sweet Dream of Mahendranagar for 14th and 15th of June, 2019. Inaugural session of the program was chaired by the chief of Mahakali Irrigation Management Office Mr. Pradeep Bantawa. Mr.Bantawa while inaugurating the program wished effective capacity buildup among the participants after the training program and wished the success of training program. Senior Sociologist of Department of Water Resources and Irrigation (DWRI) Mr. Gauri Lal Upadhyay in his speech welcomed all the participants and discussed about the importance of training program, course content and design. Resource person of the training program were Mr. Bashudev Lohanee, Deputy Director General of DWRI, Mr. Pradeep Bantawa, , Mr Gauri Lal Upadhyay, and Senior AO Bharat Titara.

The training for WUA of Nepal Gandak Western Canal System and Piparpati Prasauni Minor was held at meeting hall of Hotel Royal Peace of Tribeni, Nawalparasi for 17th and 18th of June, 2019. The program was inaugurated by the chief of Gandak Irrigation Management Office (GIMO) and the chief guest of the program Mr. Tikaram Baral. Chief Mr. Baral wished the success of training program. Er. Jitendra Sahni welcomed all the participants of the program. Senior Sociologist Mr. Gauri Lal Upadhyay in his speech discussed about the importance of training program, course content and design . Resource person of the training program were Mr. Bashudev Lohanee, Deputy Director General of DWRI, Mr. Tikaram Baral, Mr Gauri Lal Upadhyay, and Er. Jitendra Sahani.

The training for personnel of WUA of Block 2 of Narayani Irrigation System was held at meeting hall of Hotel Simara of Bara for 20th and 21st of June, 2019. Inaugural session of the program was organized chaired by the chief of Narayani Irrigation Management Office Mr. Rajendra Prasad Sah. Chief Sah expressed the view of effectiveness of training for capability development among the participants after the training program and wished the success of training program. Sr. AO Mr.Jang Bahadur Chaudhary welcomed all the participants of the program. Senior Sociologist Mr. Gauri Lal Upadhyay in his speech discussed about the importance of training program, course content and design . Resource person of the training program were Mr. Bashudev Lohanee, Deputy Director General of DWRI, Mr. Rajendra Prasad Sah, , Mr Gauri Lal Upadhyay, and Sr. AO Mr. Jang Bahadur Chaudhary. At the end session of second day, of each training events, participants of the training program were involved in interaction and group presentation.

All the training events were coordinated by Sr. Sociologist of DWRI/ IMD Mr. Gaurilal Upadhyay.

FEATURE ARTICLES

Design concept of Dhap Dam Project

Rajendra P. Adhikary *

Background:

Bagmati River Basin Improvement Project (BRBIP) is in implementation stage at various parts of Bagmati River focusing presently in the upper basin that covers from Shivapuri to Chauvar George in Kathmandu valley. The river Bagmati flowing through the central part of the capital city has numerous heritage monuments and temples along its bank signifying cultural and spiritual attachment of Bagmati river with the Hindu civilization and the people of Nepal. Bagdwar at Shivapuri hill, Gokarneswore, Pashupati and Guheswori temple complex and various other temples and monuments from Thapathali to Teku Dhovan are landmark of civilization established from the time of Gopalbansi, Kirat, Lichhavi, Malla, and Shah Dynasties.

Realizing the historical importance of Bagmati river civilization and to preserve the sacredness of the river from uncontrolled urbanization of the valley, the Bagmati action plan-a periodic plan document of Bagmati river and its tributaries- formulated its objective to improve the precarious and heavily polluted environment of Bagmati River by various developments and conservation activates. One of the major interventions is in the improvement of quality of River water to acceptable bath able standard in accordance of WHO limit at Aryaghat stretch of Pashupatinath complex for the pilgrims and simultaneously maintains a suitable habitat for aquatic creature to thrive in river environment. The objective of improving water quality gave rise to the establishment of Dhap dam reservoir project on the top of shivapuri-Nagarajun national park area at Dhap. Besides improving the quality of River water, the water from the Dhap reservoir can increase the flow of river significantly during the lean season of hot summer. At present, Department of Water Resources and Irrigation is an implementation unit and executing the project funded by Asian Development Bank under Bagmati River Basin Improvement Project. Hence, the Dhap reservoir project stores water from the monsoon rainfall that is not for irrigation but is of environmental, religious and cultural use.

Engineering part of the Dhap Dam project:

Besides Kulekhani reservoir, as a matter fact there are very few reservoir projects in Nepal. Department of irrigation has not taken much initiation in formulating reservoir project to store water solely for irrigation use, probably due to shortcoming of economically viability and technical suitability. In such a preliminary stage of our skill of dam building, the construction of Dhap dam to store water by three earthen saddle dams at the low laying valleys near the edge of the reservoir area and a main concrete faced rock fill dam at the deepest george of the Dhap area is a latest technological stride in the time line of our journey of Dam construction.

Following are the silent features of the project:

Dam height- 24 Meter

Top length- 173 meter

Dam Crest elevation -2090.14

Crest Width-8 Meter

Free Board- 3 Meter

Water Storage capacity – 8.5 Lakh cubic meter

Numbers of Saddle dams- 3

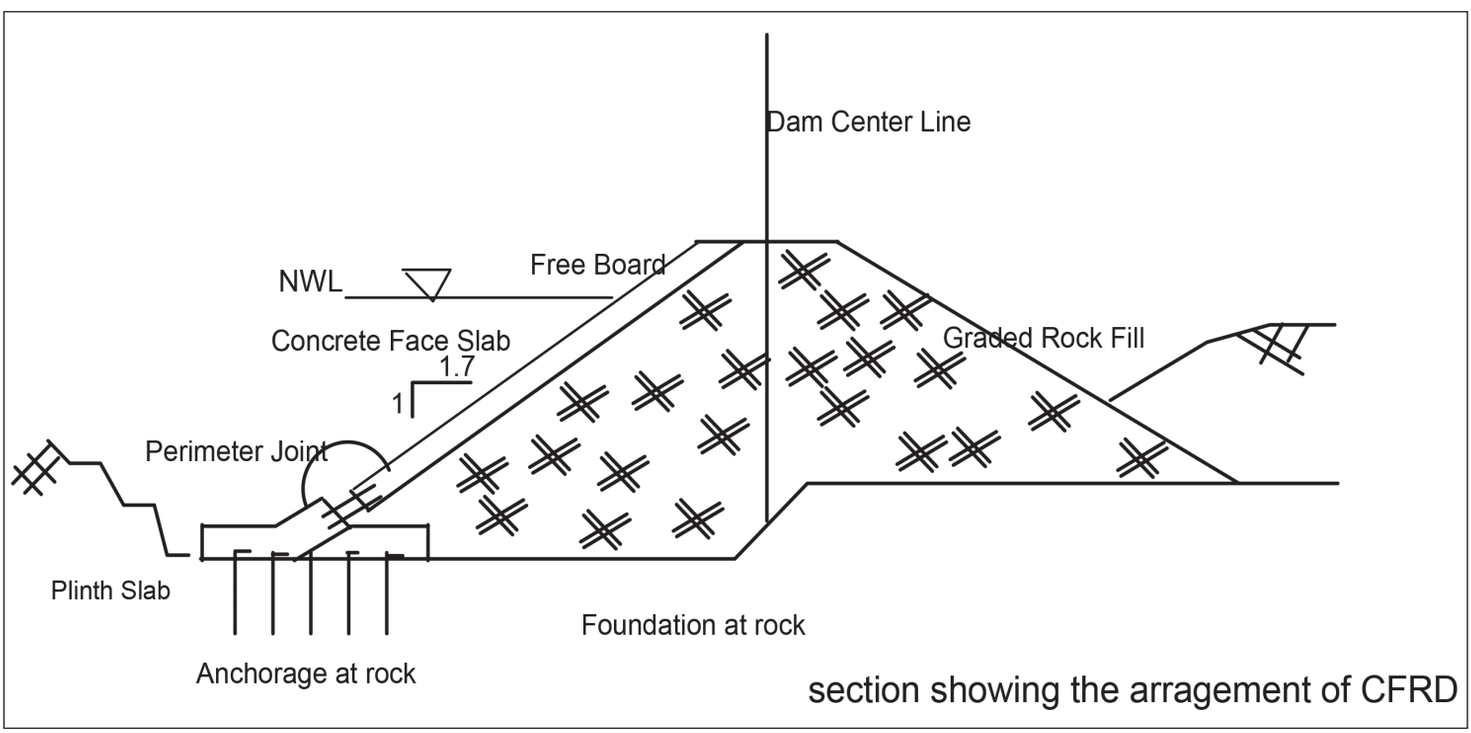
Method of construction: Based on ICOLD Bulletin no 141 (2010)

Main dam:

Embankment of rock fills in Main Dam:

The main dam embankment comprises of quarry run graded rock material that are laid layer wise to form a series of composite zones on the foundation of Gneiss variety of rock popularly known as Shivapuri Gneiss of Metamorphic formation. There are all together 8 no of zones in the entire rock fill mass of main dam. The zones are basically categorized based on the maximum size of rock fragmentation and the grading from bigger to the smaller size. Layers of filter material made up of graded sand and gravel are placed in various layers as we go on increasing the height of the embankment. Each layer of the fill materials is crushed by roller to achieve required dry density and permeability value as specified. The rock fill embankment has to comply 3 major objectives –

1. The water should be freely drained out so as to avoid any pore water pressure within the dam body.
2. The strength of rock fill should be strong enough to resist



section showing the arragement of CFRD

the pressure exerted by the concrete slab and the water pressure when the reservoir is full of water. This capacity of the rock embankment is tested by measuring the modulus of deformation and should be within the range of 50 Mpa to 100 Mpa.

3. The rock fill should be resilient enough to counter earthquake up to certain magnitude of assumed value of severity.

Concrete slab in Main Dam:

Concrete slab is another important component of the concrete face rock fill dam, by which it got the name Concrete Face Rock fill Dam. The reinforced concrete slab is a solid barrier between the rock fill embankment and the massive water body filled in the reservoir. It does not allow the water of the reservoir to come in contact with the rock fill embankment on its back. The slab is supported on the bottom rock foundation through the plinth beam casted on top of rock foundation which is anchored by 6 meter long 25 mm diameter steel rod throughout the length of the dam in the configuration as specified in the design. The plinth slab and beam avoids the retained water of the reservoir to seep in the foundation of dam body. Numbers of slab panels are laid across the entire length of main dam in order to cover the whole rock fill surface of the dam facing toward the reservoir. By this method, the entire concrete structures facing towards the water body protects the graded rock fill embankment from the storage of water, keeping the rock fill mass zones unhindered and intact permanently.

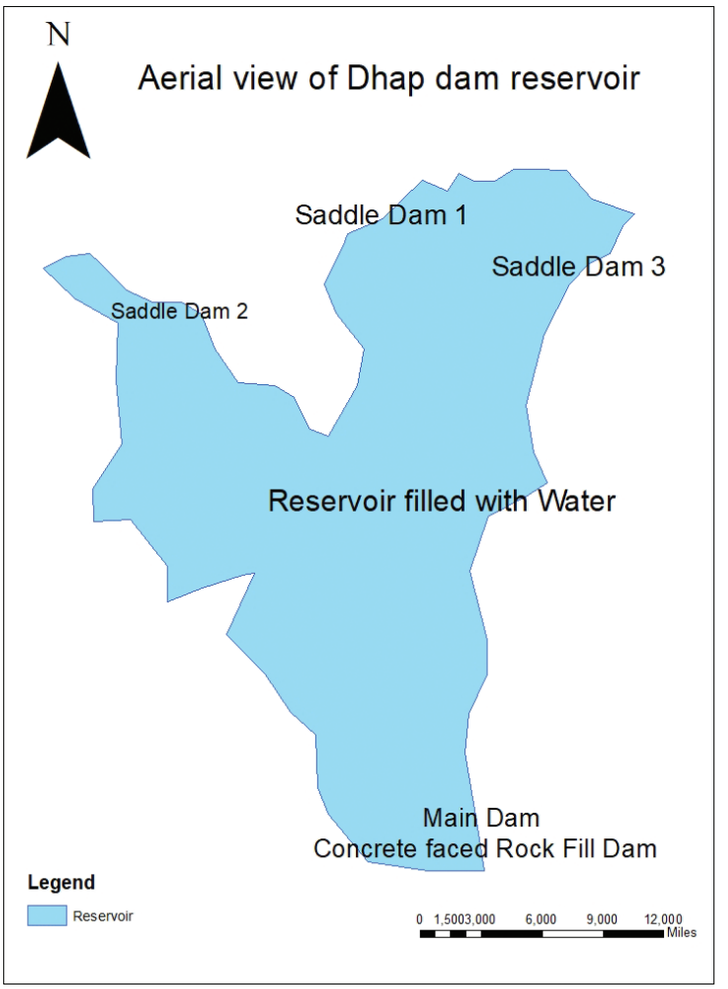
Saddle dam:

The saddle dams are constructed with laboratory tested suitable earth fill material and compacted layer wise so as to achieve 96% of dry density in reference to the laboratory tested Proctor value. Since the fill material is less permeable and it is covered by the graded sand and gravel filter to systematically drain the seepage water if any, the stability in normal condition and during the time of earthquake is achieved by the flattened slope in upstream and downstream faces and the height of free board provided as per the calculation.

Dhap Dam is Earthquake resilient:

Dam retaining 0.85 million cubic meter of water and situated on the top of Shivapuri hill with wide spread urbanization on foot hills and Kathmandu valley is obviously in a precarious state of vulnerability from the point of view of frequently occurring earth quake and the subsequent tremors. This has been in consideration of design. The requirements as furnished in the ICOLD Bulletins are thoroughly implemented in the design of the different dam components. Following components of dam come into action at a time of accelerated ground motion caused by the earthquake.

Earthquake severity index (ESI) is calculated based on Earthquake magnitude which ultimately depends on Peak Horizontal Ground Acceleration (PGA). In the case of Dhap dam PGA has been taken up as 0.5 g. Thus Earth quake severity index (ESI) is calculated to be 21.44. As per ICOLD bulletin 141 for ESI 20 and the angle of fill material as 45 degree. The dam settlement is 1 %.



The Dhap dam with maximum height of 24 meter, the anticipated settlement is 24 centimeter. The provided free board, which is the allowance for settlement of crest due to earthquake, provided is 3 meter above the normal reservoir level. This shows that even in the earthquake having peak horizontal ground acceleration up to 0.82, the water from the dam will not spill over the crest thus keeping the dam body intact even with the shock generated by ground motion.

The flexibility of the material composition of graded rock fill, freely resting multiple panels of reinforced concrete slabs on the back of rock fill embankment having slope of 1vertical and 1.7 horizontal and hydraulically tightened water tight joints in between the slab made up of highly malleable cupper strips with bituminous materials, are the cushioning components to absorb the earthquake shocks.

* Mr. Adhikary is Former Director General of DWRI, Presently working as Consultant, Bagmati River Basin Improvement Project

FORTHCOMING EVENTS

2nd International Conference on Academic Research in Science, Technology and Engineering 3rd to 5th December 2019 Vienna, Austria Website: http://www.icarste.org Contact person: Samantha Joyce

19th International Multidisciplinary Scientific GeoConference SGEM 2019 9th to 12th December 2019 Vienna, Austria Website: http://www.sgemviennagreen.org Contact person: Secretariat Bureau Organized by: SWS Society Deadline for abstracts/proposals: 1st October 2019

International Conference on Research in Engineering and Technology 12th to 14th December 2019 Barcelona, Spain Website: https://www.researchconf.org Contact person: Delsie Houston

6th International Conference on Environmental Systems Research (ICESR 2019) 18th to 20th December 2019 Melbourne, Australia Website: http://www.icesr.org/ Contact person: Hedy Organized by: ICESR Deadline for abstracts/proposals: 10th October 2019

16th Pattaya International Conference on Chemical, Biological, Agricultural and Environmental Sciences (PCBAE-19) 23rd to 25th December 2019 Pattaya, Thailand Website: http://cbaes.eacbee.org/ Contact person: Alissa Matthew Organized by: Emirates Association of Chemical, Biological & Environment Engineers

9th International Conference on Environment Science and Biotechnology (ICESB 2019) 28th to 30th December 2019 Phuket, Thailand Website: http://www.icesb.org/ Contact person: Ms. Jewel Hou Organized by: ICESB Deadline for abstracts/proposals: 20th October 2019

10th International Conference on Future Environment and Energy (ICFEE 2020)--EI Compendex, Scopus 7th to 9th January 2020 Kyoto, Japan Website: http://www.icfee.org/ Contact person: Ms. Jewel Hou Organized by: ICFEE Deadline for abstracts/proposals: 30th Octobe

The 4th IAFOR International Conference on Sustainability, Energy & the Environment – Hawaii (IICSEEHawaii2020) 10th to 12th January 2020 Honoluu, Hawaii, United States of America Website: https://iicseehawaii.iafor.org/ Contact person: Organising Committee Organized by: The International Academic Forum (IAFOR) Deadline for abstracts/proposals: 23rd August 2019r 2019

19th Spain International Conference on Agricultural, Environmental, Biological and Medical Sciences (SAEBM-20) 20th to 22nd January 2020 Madrid, Spain Website: http://drabl.org/conference/288 Contact person: Bella Martin Organized by: Dignified Researchers in Agricultural, Biological and Life Sciences

10th International conference on Research in Engineering, Science and Technology 21st to 23rd February 2020 Rome, Italy Website: http://www.restconf.org Contact person: Angelina Zetticci

11th International Conference on Environmental Science and Development (ICESD 2020)--EI Compendex, Scopus 10th to 12th February 2020 Barcelona, Spain Website: http://www.icesd.org/ Contact person: Ms. Emma Chen Organized by: ICESD Deadline for abstracts/proposals: 30th November 2019

6th International Conference on Food and Environmental Sciences (ICFES 2020)--EI Compendex, Scopus 23rd to 25th February 2020 Hanoi, Vietnam Website: http://www.icfes.org Contact person: Hedy Organized by: ICFES Deadline for abstracts/proposals: 10th December 2019

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