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Run off water management in Bailadila Region

Background information

Mining activities in Kirandul and Bacheli in Bailadila have damaged the Bailadila region of Chhattisgarh. Shankhini is the main river in Bailadila on which around 100 villages are dependent as main source of water for drinking and agriculture but due to excess mining, the water quality has been degraded drastically. Apart from this most of the drinking water wells are reaching to dry condition. The main reason behind this polluted water (containing high TDS and SS and high turbidity) is mining. Iron is generally mined by open cast or strip mining, rather than tunneling the earth. This method includes extracting minerals from an open pit. This has changed the dense forest area into barren land causing the mine run off highly turbid water containing high iron concentration also. During heavy rainfall, the situation further worsen as the mine runoff joins the streams/nalla and finally meets Sankhini and dankini rivers.

Objective

The main objective of this project is to figure out the flow pattern of rainfall in this area and find out a suitable reservoir in which this rainwater can be collected and allowed to settle.

Background data required

1. Rainfall data : India meteorological department
   Daily rainfall data of Bailadila, Chhattisgarh will be collected from India meteorological department for 2014-15. On the basis of this data, the total run off from this area will be calculated
2. Land use, land cover map of Bailadila region: cartosat-2
   On the basis of topographical map, the total barren area and area under dense forest area will calculated which will give us the brief idea about the area from which maximum run off red water is generating.
3. STRM 90m data.
   Starting from the raw digital elevation data, a geoprocessing analysis was performed to recondition the digital elevation model and generate data on flow direction, flow accumulation, stream segments, and watershed delineation.
4. Water flow measurement data : NMDC limited
   On the basis of water flow data, the highly eroded area and the area of high concern can be identified.
5. Water quality data: NMDC limited.
   Water quality data from each of the streams will tell us about the water quality in different areas.

   Expectation:
   On the basis of above project and estimations, an area will lowest elevation and the best suited reservoir in this area can be decided which will help in proper water treatment and further increase the water availability in this area.