Groundwater Potential Mapping
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Having understood groundwater as the major component in the agriculture. So there is a need and we have seen what is the groundwater level measurements and where does it occur and all those thing and it is always necessary that we to try to find out what are the; which are the areas where the groundwater potential is very high and where groundwater potential is very low and what is the dependability of groundwater for our own activities is important then this section what we are going to talk about is how ground water potential mapping is then so you try to take all the aspects about terrain and information from the satellites, information from the existing bore wells and things like that. Everything is mix, everything is integrated then you start preparing the groundwater potential mapping.

So what this ground water potential mapping it tells is which are the areas which has got high potential ground water potential that means wherein the groundwater storages potentially high or probably high when compared to the rest of the areas and that has been validated by the existing bore wells as existing opened dug well areas. So this terrain parameters are the only thing which indicates about this activity. Now this potential mapping they could be added unto this picture shows about the three-dimensional picture about a particular hilly area where in draft-over by the satellite images and the satellite images, in this area the problem is that you get lot of cloud patterns and you have lot of vegetation growth as well as you have the river areas. So GIS is used in creating the perspective digital elevation model and also to provide about what all the different land cover features as well as the atmospheric cloud patterns. In this way what you will be able to say that when compared to the two dimensional planar maps when compared to this three-dimensional map; is that you'd be; the position of if we are planning for some amount of storage facility.

So which are the areas where in you will be able to have enough space to store the runoff and then make use of it for drinking water facilities when compared through the activities, through the pictures. Now this is one map which has been prepared by the groundwater perspective map and prepared by the NRSC type. So, what this is the different features which gives about one thing is the different colours indicate about the yield ranges; what is the yield ranges from a 800 and greater than 800 litters per minute to 10 to 14 millilitres per lpm that is litters per minute and also other structures like some of the runoff resort, barriers and other things can be also shown in some of the areas. So now how it is prepared is it is prepared based on the lithological unit then how it is fragmented or what all the pore spaces which are available and what all that depth. So these are all the few parameters of that particular area is taken into consideration and it is validated by some of the wells which are observed the existing swells later observed in this area and based on the yield range of this category these two surface observations investigations validated or equated with the wells observed in this section then based on that is the groundwater potential nothing mapping been done this the one advantage in this type of mapping is it talks about the potentiality of the rock type in that area and also what are all the road networks as well as the existing; existing wells or existing tanks in this area so that this groundwater potential nothing could be synergize with the surface storage recharges zones which can be identified for recharging the groundwater in

this particular source. Now if you if your area falls in any of these sections that means you have the 100 to 200liters of lpm is possible in this area then it is further advised that do your site based investigation wherever you are interested before you confirm your activity but it definitely either it may be in 100 or it may be in the form of 200 liters per minute is assured from this area. This is used for a planning purposes our large-scale developments and groundwater as a supplementary source.

Another actually how it is prepared in the rocky areas are; rocky areas what happen is pore spaces, water stored and in the rocky areas the fractures are used taken as a source for storages if what are these things is this is the major fracture in this area; the fracture is likely to be punctured or fragmented on the either side by 5 meters 10 meters depending upon the length of the area that means this zone has got a major potential for storage that means it is a fragmented and this is given as a buffer zones and if even compared to this area. This region has more probability of getting the groundwater and then further the probability is very high when two three such fracture are meet together because the fragmentation is still further was and you'll be able to store more water. Another in GIS and the related information is when you look at the perspective view of a particular hill station or hilly areas what you'll be able to see you'll be able to see only these courses whereas that shadow regions shadow region in the sense where we are not able to from this particular angle this could be rotated around and you'll be able to see what is the type of sources and where all the groundwater potential sources are possible in this area.

Now another software which is being normally used for the groundwater content mapping is; it is a drastic, so the parameters which it takes this depth to the water, the recharge rate of that particular area aquifer media is nothing but what is the material it is made up of; either it is a rock or whether it is a consolidated unconsolidated; what is the soil thickness and the style characteristics, topography that is a terrain then vadose zone; vadose zone is nothing but wherever there are certain in-between the anomaly type of activities for a storage purposes what is the hydraulic conductivity then what is this weight is the probability if you get a depth is very shallow depth then the probability is on the higher side if the; then similarly if there is going to be a topographic steep topography, a general topography of that kind of category. So that is also importance is very less. So what people does it they assign weight to the individual parameters and then they prepare the vulnerability; potential groundwater zones so whether it is and also how vulnerable these areas for withdrawal purpose with oil and discharge areas so this is also being widely used in agriculture planning purposes on a large scale as well as when you want additional water this type of methods are also used.

So third thing is caustic topography is what is a caustic; caustic is nothing but in a limestone areas there are certain caverns which are formed because of the solution cavities and that will lead to the vulnerability issues which can be grouped into very high to low vulnerability areas and that is more important because if you are going to have agriculture pattern, agriculture over here then here the vulnerability is more there would be an effect on these two adjoining areas is possible. So this type of area relationship also important in the ground water potential map when you want to consider it as a supplementary irrigation source for crop production.

Now what we have seen in this lecture is about the ground water potential mapping. How it is done? What are all the important factors it tells you about it. It is nothing but when you consider the ground water as a potential source for supplementary irrigation how much reliability you will be able to get and how much fluctuation is possible in this area that can be synergized with your surface water or rainfall information. Thank you.