Establishe co-relation of Hydro Gyological by rockworks in Command Area.

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Abstract: Work is now geological, geochemical, hydrological, biological, for the design and management of artificial recharge systems, including engineering aspects that could be helpful, when you give an idea of the hydro geological details of the aquifers that can spread the realization up was carried out. A soil and underground structure is due essentially heterogeneous. When I first fatal flaws and to test the general possibilities and be able to design and build the entire system and proceed to the next pilot and small scale systems. This approach is particularly effective in a normal scale effect is important large-scale systems.In this paper established different profiles of well sections and co relation of different wells' profile. That will help in further study for aquifer modelling for conjuctive use .

Keywords—Aquifer, Ground, water modelling ,Rockworks,Perched Aquifer, Unconfined Aquifer.

I. INTRODUCTION

Water and nutrient balance accurate assessment of large scale wetland systems need a conjunctive modeling of groundwater flow and water flow in the main aquifer of the marsh surface. The interaction between the two water masses are distinguished gradient and / or the concentration distribution of the contaminants, biological population, chemical, flow, mixing characteristics, the oxidation reduction potential, dissolved oxygen, resulting in the conversion of organic matter, and thermal properties. Although the concentration distribution of the prediction challenging contaminants in the

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Although the concentration distribution of the prediction challenging contaminants in the contaminated area, including treatment alternatives is necessary to evaluate the human health and environmental hazards. Today, many countries are facing major problems, use urban center, how to expand the traditional agricultural

sector to manage the increased competition for water, and the stream of water is determined by the environment and wildlife habitat issues. Possible facing views and large-scale water projects in the water highly competitive in the growing difficulty of construction, water users must rely on better management of existing businesses through the conjunctive, including the use of integrated watershed broader strategy of surface and groundwater resources.

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II OBJECTIVES

These are project objectives may be seen as technology developed at the end of the research. Basic objective is to define the multi-aquifer system in Dharoi canal command area for setting up correlation-ships between wet lands and depleting water bearing strata to formulate strategies for artificial recharge and conjunctive use of groundwater, using numerical groundwater modeling technique.

III METHODOLOGY

Methods of Analysis

For setting out the contour and Graph: Surfer and Grapher software will use.

A. ***Surfer***

Surfer is a full-featured 3D visualization, contour and surface modelling package that runs on Microsoft Windows. Surfers, the volume measurement readings, terrain modeling, depth modeling, landscape visualization ,surface analysis, contour maps, and 3D surface mapping watersheds are used

extensively, contour and 3D surface plots that run on many more. Surfer 9 for Microsoft Windows The program window. Surfer 9 to quickly and easily transform data into outstanding contour maps and surface plots. And with all the options available in Surfer 9, you can do exactly what you customize the map in order to produce the desired presentation. To produce publication quality maps of surfers, quickly and easily, and never more dramatically satisfying.

B ***Grapher***

Gauge Package graph is the ultimate technology available. This easy to use, powerful and dynamic program will help you create professional quality publication quality graphs in minutes! Wow the audience every time you see one of your graphs. Create 60 or more unique graph types. 2D or 3D linear or logarithmic line, distribution, functions, class balancing, bubble, bar chart, create a floating bar chart graph. Create line, bar, rose, wind, radar polar plot. 2D and 3D vector to generate the plot. To create a line, dispersing, or foam circle diagram. High-low-close or display the candlestick plot professional. Histograms, box-whisker creates statistics and graphs, including pie charts, Q-Q plots.

C ***Rockworks***

Rockwork is a great tool for geotechnical and civil engineers to use in evaluating the construction and excavation sites. You begin, or whether it ends the stage in the middle of a project, you could see that Rockworks can save time and money for you and your customers.

IV. STUDY AREA and MODEL AREA*:*

Latitude below 20O 00 "and 24o 42" North 68 o 08 hardness falling Research Area "and 74o 48" East is Mehsana, Visnagar, Vadnagar, located in Mehsana district of Gujarat state covers part of the Kheralu and Unjha talukas. Dense canal network in the command area is the agricultural plain terrain, sometimes more or less at the height of 92.96 m above sea level, atop a hill area. The contour of the surface level is displayed on the main river Pushpawati, Rupen River drainage; Flow is evident when intense rainfall**.**

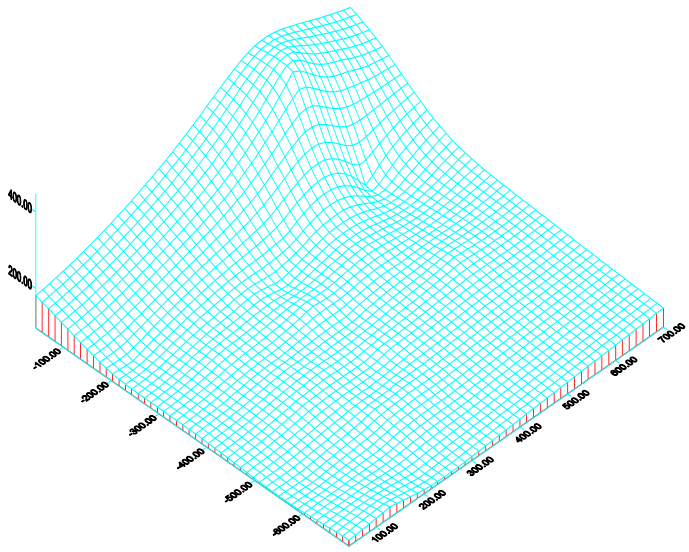

Fig.1: Surface level contours depicting the topography of the area

(Pearched aquifer area and Study area of modelling)

Thick pile of recent alluvial formation has deposited in the study area. Alternate layers of sand and clay are laid down to a considerable depth of about 180 to 330 m. Blue clay, boulder formation and basement rock is also met with at certain places in the study area. The thickness of alluvial formation increases from north-east to south-west. The physical observations indicate coarse sandy material laid down in the Eastern areas where as it becomes finer towards west and south-west areas. Ground water occurs under water table as well as in confined condition in the discontinuous beds of varying thickness of sand, kankar and gravel that constitutes the alluvial aquifers in hard rock terrain. Consolidated formations are mainly dominated by basaltic lava flows associated with inter trappean, infratrappean and archean rock formation represented by phyllites, gneisses, quartzite and granites. Minerals such as Keoline and crude oil are available in the nearby areas. In the adjoining areas of Mehsana and Sabarkantha district the aquifers are highly jointed and fractured or extensively weathered. Wells tapping some thick rock-formations of this type yield as much as 1, 00,000 litres per hour and 40,000 litres per hour are more common. Such aquifer of moderate potential is available within 100–150 m below GL and even as closed as at 30–40 m depth in some of the locations. The phreatic aquifers in the alluvial strata are

only suited for shallow wells and low yields tube wells. Bradley and Phadtare (1989) highlighted two distinct aquifer systems, viz. a phreatic aquifer varying in thickness from 9 to 35 m overlying a series of aquifers and aquitards (Figure 2) and isolated perched aquifers (Figure 4) within the phreatic aquifer. They found that the total thickness of the aquifer system is around 250 m..

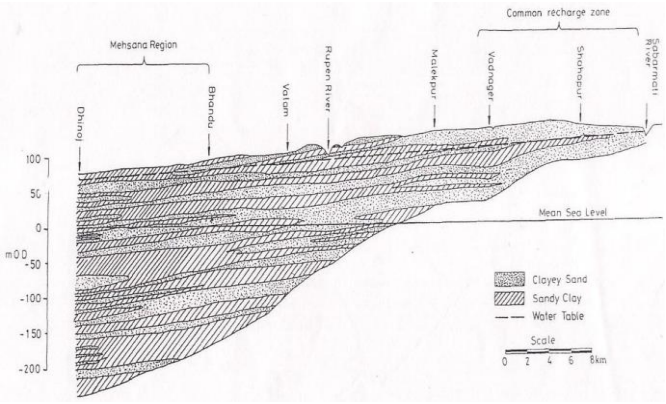

Figure 2 Geological alluvial settings in the study area

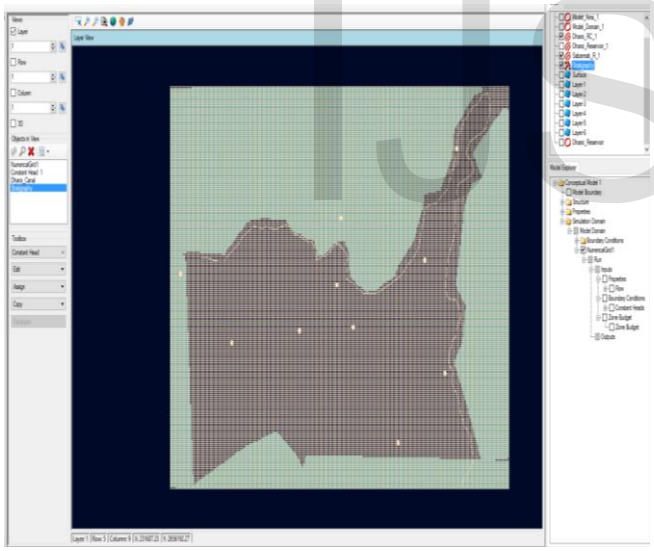

Figure 3 Model Discretization and Boundary Conditions..

The Dharoi dam was commissioned during the year 1985. Flood irrigation is the only adopted method of irrigation by almost all the project beneficiaries. Dharoi project has created a good irrigation facility in the command area, but adverse effects are also noticed. The major problems reported are: the water levels have risen above safe limit, salinity has increased in some areas due to salt leaching, soil fertility has decreased due to admixture of saline water, and net crop production has also decreased due to application of sub standard water and soil deterioration. During the year of good rainfall, most of the command area is facilitated with surface water irrigation. It is said that the canal water is applied without considering actual crop water needs and ample water is being wasted from the canal system. More over the canal lining is distorted and leakage throughout the length of the canals is not ruled out. Some parts of the command area are waterlogged and very shallow water levels .Kharif crops such as Bajri, Jowar, Wheat, Paddy, Fennel, Castor, Groundnut, Sesamum, Rape seed, cotton and Rabi crops like Bajri, Jowar, wheat, cumin, Isabgul, Mustard are generally sown in the area. Presently, cash crops of bajari, cotton and jowar are grown more frequently in the region. Table 1 shows yearly available storages in the reservoir and releases through head regulator of the right bank canal, since 1985–1986. Canal supply is more influenced by the available storage in Dharoi Dam rather than crop water requirements.

Table 1 Year-wise available storage in the reservoir and irrigation releases through head regulato

Year	Reservoir WL (m)	Gross Storage (Mcum)	Water released in Kharif (Mcum)	Water Released in Rabi (Mcum)	Water released in hot weather (Mcum)	Total water released (Mcum)
1985–86	184.3676	458.779	17.55614	83.08362	31.38803	132.0278
1986–87	180.4785	261.8075	0	0	0	0
1987–88	176.239	137.0901	0	0	0	0
1988–89	188.1469	761.4701	0	99.36937	27.36904	126.7384
1989–90	185.1996	516.1689	0	84.80617	0	84.80617
1990–91	189.5763	907.7052	0	115.6645	74.1889	189.8534
1991–92	189.5611	905.0438	12.93154	149.0604	73.72118	235.7131
1992–93	189.5763	907.7052	6.313732	165.3835	94.37529	266.0726
1993–94	189.2563	872.8806	29.53015	185.1277	55.29556	269.9534
1994–95	189.5763	907.7052	0	196.102	106.4218	302.5238
1995–96	185.8123	1,266.654	24.89621	46.35667	0	71.25288
1996–97	183.7915	1,276.818	18.57313	0	0	18.57313
1997–98	186.6047	1,348.902	0	116.6333	28.3127	144.946
1998–99	183.5873	1,348.902	0	76.48365	0	76.48365
1999–00	176.5986	1,348.93	0	0	0	0
2000–01	178.8662	1,361.983	0	0	0	0
2001–02	184.4285	1,361.983	12.72741	126.5467	0	139.2741
2002–03	178.3755	1,362.011	0	0	0	0
2003–04	184.9985	1,362.039	0	193.6034	0	193.6034
2004–05	178.9973	1,362.067	0	38.50527	0	38.50527
2005–06	189.5763	1,362.096	0	224.3818	0	224.3818
2006–07	189.5763	1,362.124	0	257.8494	65.95161	323.801
2007–08	189.5763	1,362.152	0	273.8838	62.82588	336.7097

Source: Gujarat Water Resources Data Center, Gandhinagar, India

V. Lithologic modeling of dharoi region using rockworks

A Summary:

Three-dimensional modeling technique has been used in more rock characterization and modeling of groundwater flow Dharoi city of Gujarat state fraud aquifer system of the Indian subcontinent. Then the data using Rockworks rock model was constructed to log in. Ground water flow is facilitated by the MODFLOW model was built using the results of the rock model. The obtained model is a complex sedimentary rocks are of course configure the system to log data honored mainly rock six categories, revealed: clay,clay, sand, fine sand, coarse sand, sand, gravel, gravel. It tends to be sandy layer connection. For the hydraulic continuity between this study and the fingering is displayed as part of the Dharoi Sabarmati river basin sub-basin of the connection of the sand aquifer materials within the selected system Area. Dharoi sub-basin study area is designated as a line in the Sabarmati River Basin map. Top Sub-basin and watershed area covering up major rivers of Dharoi dam is designated as Dharoi sub-basin. Dharoi dam was built in 1978 in Ahmedabad Mehsana district is located approximately 165km upstream to the village Dharoi. It covers an area of drainage to the main river of the Dharoi.

B Lithologic modeling of Quaternary aquifer system

Research for the study area as an underground rock log indicates that the local clay, clay, sand, fine sand, coarse sand, sand, gravel, gravel consists of six categories. Sedimentary sequences that occur in the study area revealed the complexity of the sedimentary basins and aquifer heterogeneity of the system on morale. Direct correlation between the log as a 3D representation of the rock log shows that it can be obtained from a conventional two-dimensional representation. Therefore, the true three dimensional reading method used in this research was provided by Rockworks software package was used for "Solid Modeling" concept based on rock modeling techniques. "Box" irregular interval data by interpolating the measured value of types .Lithologic modeling of underground rock formations of well logs indicate that the zone is composed of six categories for localized areas of research fraud investigation aquifer system regular intervals node generates clay, clay, sand, fine sand, coarse sand, sand, gravel, pebbles from. Sedimentary sequences that occur in the study area revealed the complexity of the sedimentary basins and aquifer heterogeneity of the system on morale. Direct correlation between the log as a 3D representation of the rock log shows that it can be obtained from a conventional two-dimensional representation. Therefore, the true reading three dimensional way in the present study are available in the software package used was Rockworks based on the concept of "solid modeling" method was used for modeling the rock. "Box" is regularly made by every node from irregular interval data by interpolating the measurements of the rock type.Here, figures represent the different sections and sctions of co relations between wells. Also shows the aquifer contour map.

Fig4.Location of bore well on Google map

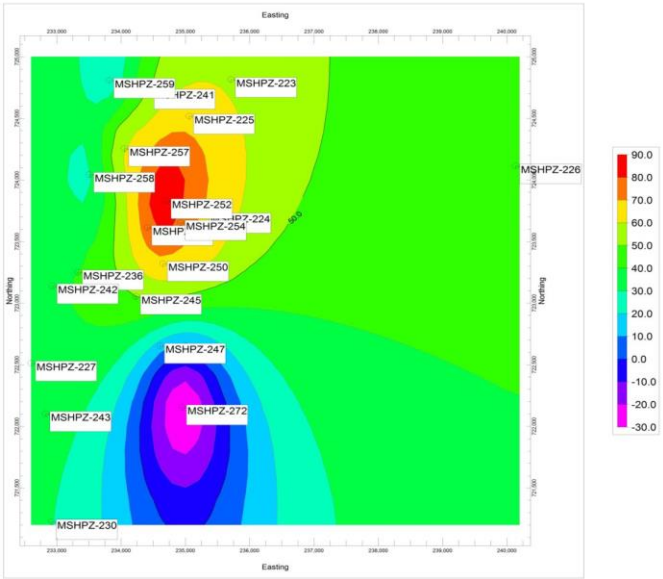

Fig 5 Aquifer contour map

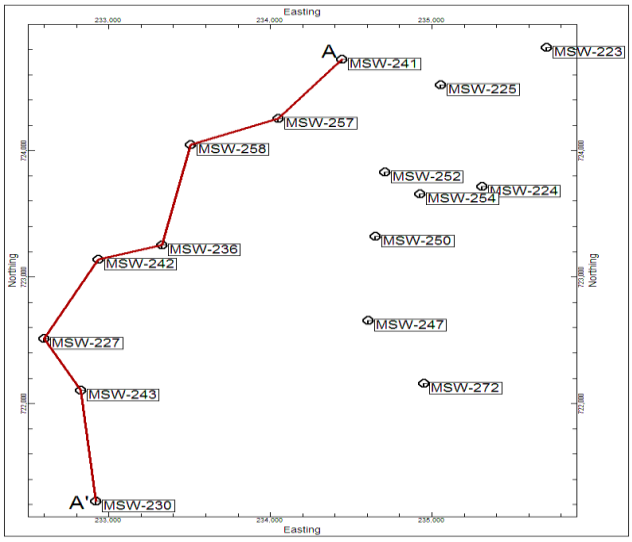

Fig 6 Location of wells for Aquifer section A A'

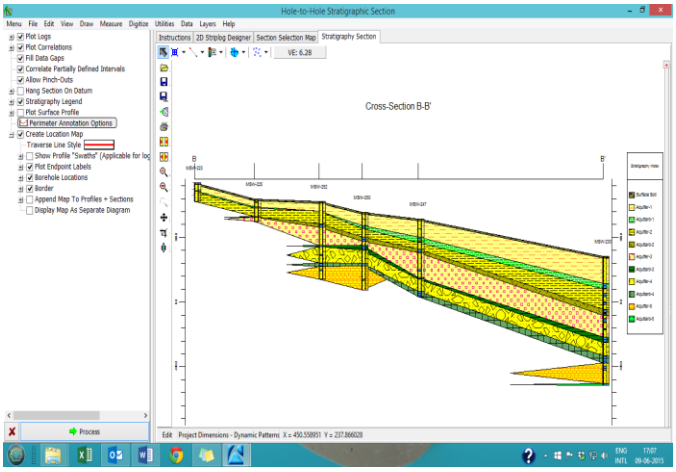

Fig 9 Auifer section B B

C. Profile of Co relation between wells

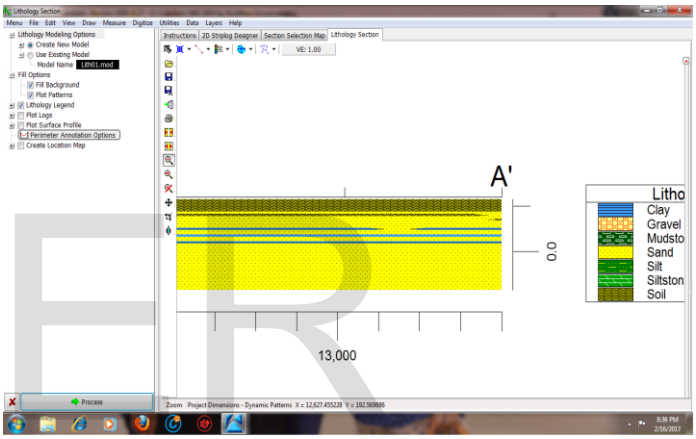

Fig: 10 Co relation between wells (223,224,225,252)

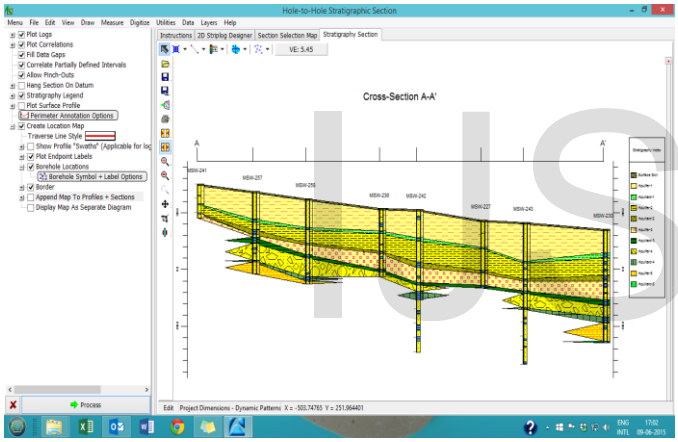

Fig 7 Auifer section A A'

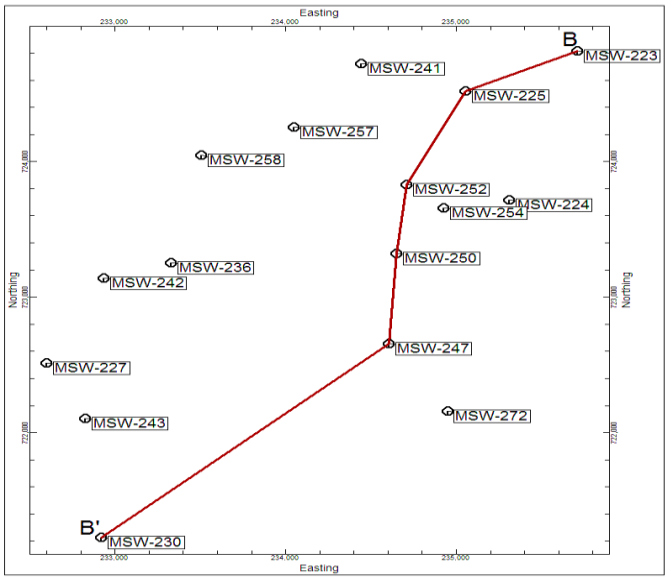

Fig 8 Auifer section B B'

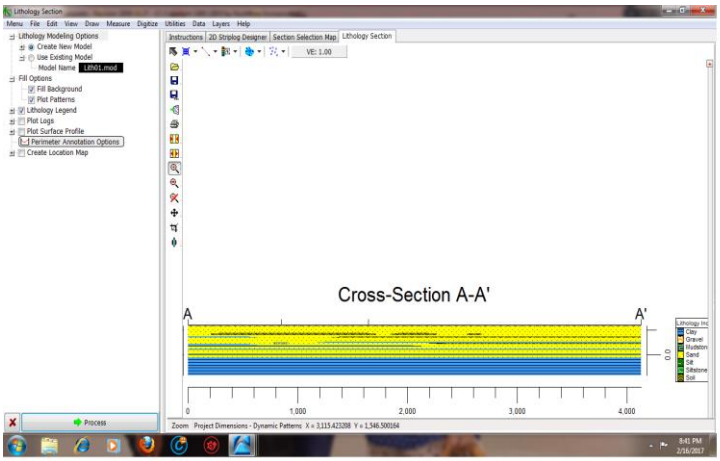

Fig: 11 Co relation between wells (224,225,252,227)

IV RESULTS AND DISCUSSION:

The works carried out till now give the idea of hydrogeological detail of the aquifer to propagate realizations, which could help for Design and management of artificiale recharge systems involving geological, geochemical, hydrological, biological, and engineering aspects. Because soils and underground formations are inherently heterogeneous. The excessive use of fertilizers and nutrients could also cause the water-logging and salinity problem. Here established the differnt co relations between wells and got comparision between actual section of wells and after co - relation with wells. That will help in further study and modeling with actual head Conjunctive use of surface and groundwater has been a regular remedy for water logging and salinity problems.

V CONCLUSIONS

The present paper has examined and developed an altered realisation that, water-loggingcould be defined as regional groundwater flow approaching a well storage condition locally with clogging of pores due to abrupt velocity reductions governed by a topography, exhibiting a steeper slope followed by a flatter one, all of a sudden. Therefore appropriate modelling approach dealing with such problems requires treating both regional as well as localised flow domains. Consequently, software. capabilities were not found sufficient to solve complex concepts of water-logging and salinity. Hence present study was carried out, using multiple software application for groundwater modelling. Parameters such as; aquifer and well skin hydraulic conductivities, topography, lithologs and solubility have been introduced for the first time in a groundwater modelling study of a waterlogged region. With these, the trials for conjunctive use and raw water application have become more meaningful. Such parameters analyse the problem of water logging and salinity more effectively and remedial measures would be effective on field. Significant conceptual improvement is aimed in the paper and could be more fruitful, if carried out at the planning stages of the command area development. Such modelling studies could ensure better preservation of irrigation command areas in future.

VI References

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for enhancing water use.