

L54(2380)
DINO/General

Memorandum

To: Superintendent, Dinosaur National Monument

From: Dan B. Kimball, Chief, Water Resources Division

Subject: Report for Travel by Larry Martin to Dinosaur National Monument on October 9-12, 1996

The attached trip report concerns travel by Larry Martin to the Gates of Lodore to supervise construction of a new water supply well. Larry also conducted yield and drawdown testing on the completed well to determine potential yield of the well.

The new well is 50 feet deep and produces an abundance of good tasting water. The well was tested at a pumping rate of 30 gallons per minute, being limited by the size of the test pump. The well is certainly capable of producing more water, probably in excess of 50 gallons per minute with a larger pump.

If you have any questions, please call Bill Jackson at (970) 225-3503 or Larry Martin at (970) 225-3515.

Attachment

cc: DINO - Durbin, Mott
RMSO - Wylie
2380 - Kimball, Jackson

October 18, 1996

L54(2380)
DINO/General

Memorandum

To: Chief, Water Resources Division

Thru: William L. Jackson, Chief, Water Operations Branch

From: Larry Martin, Hydrogeologist, Water Operations Branch

Subject: Trip Report for Travel to Dinosaur National Monument on October 9-12, 1996.

PURPOSE: The purpose of this trip was to supervise construction of a new water supply well and conduct drawdown and yield testing on the completed well.

ITINERARY: Departed Fort Collins on October 9 via government vehicle and drove to the Gates of Lodore, arriving the same day. Camped at the Lodore campground for the duration of the project. Departed on October 12 and returned to Fort Collins.

CONTACTS: Gary Mott, Yampa District maintenance
George McFarlane, Lodore ranger
LeRoy Kuchler, Interstate Well Drilling, Vernal, UT

DISCUSSION: A new well was constructed at the Gates of Lodore to replace an old well that was failing. The gravel pack surrounding the old well had become clogged with fine-grained sediments, reducing the flow of water to the well and limiting yield from the well. Several actions had been attempted to restore the yield of the old well, but all had been unsuccessful.

The new well is located in Conway Draw, about 1000 feet northeast of the ranger station. The well was drilled to a depth of 50 feet and encountered water bearing zones in alluvium or colluvium from 20-32 feet and fractured bedrock from 41-50 feet.

The well was constructed with 6-inch casing to a depth of 39 feet. This casing was perforated from 20-35 feet and gravel pack installed outside the casing to a depth of about 19 feet below ground surface. Cement grout was placed outside the casing from 7-19 feet to provide a seal against surface water and contaminants flowing down along the borehole.

The well was deepened by drilling inside the 6-inch casing to a depth of 50 feet. At this point we had

plenty of water and decided not to drill deeper because we did not want to risk losing the bottom section of the hole to caving of the formations. The well was completed by installing 40 feet of 4-inch PVC in the well. The bottom 20 foot section was factory perforated with 0.040 inch saw cuts. Colorado silica sand, size 8-12, was placed between the 4-inch PVC and the borehole or 6-inch casing to provide a filter pack. The top of the PVC is 10 feet below ground surface and can be seen when looking down the well.

A pitless adaptor and well cap were to be installed by the contractor to complete the project. The well will be hooked into the water system this fall as part of a project to replace and upgrade the entire water system.

The well was tested by pumping to determine yield and drawdown. A 1 horsepower submersible pump was installed and water pumped to waste for 2½ hours. Water levels in both the new and old well were monitored periodically. The maximum pumping rate obtainable with the test pump was 30 gallons per minute. Water level in the pumped well was drawn down from 15 feet to 24 feet after pumping continuously for 2½ hours, with most of that drawdown occurring in the first minute of pumping. Water level recovered to 17 feet below ground surface within 30 minutes after pumping stopped.

Water levels in the old well, located about 25 feet from the new well, were drawn down about 3 feet during the 2½ hour pumping period and recovered 1 foot during the 30 minute monitoring period following pumping.

Figures are attached to show the construction of the well and the response of water levels in the new well to test pumping.

The well is capable of producing in excess of 30 gallons per minute for extended periods, possibly more than 50 gallons per minute. If a pumping rate larger than 50 gallons per minute is desired, the well should first be tested with a larger pump.

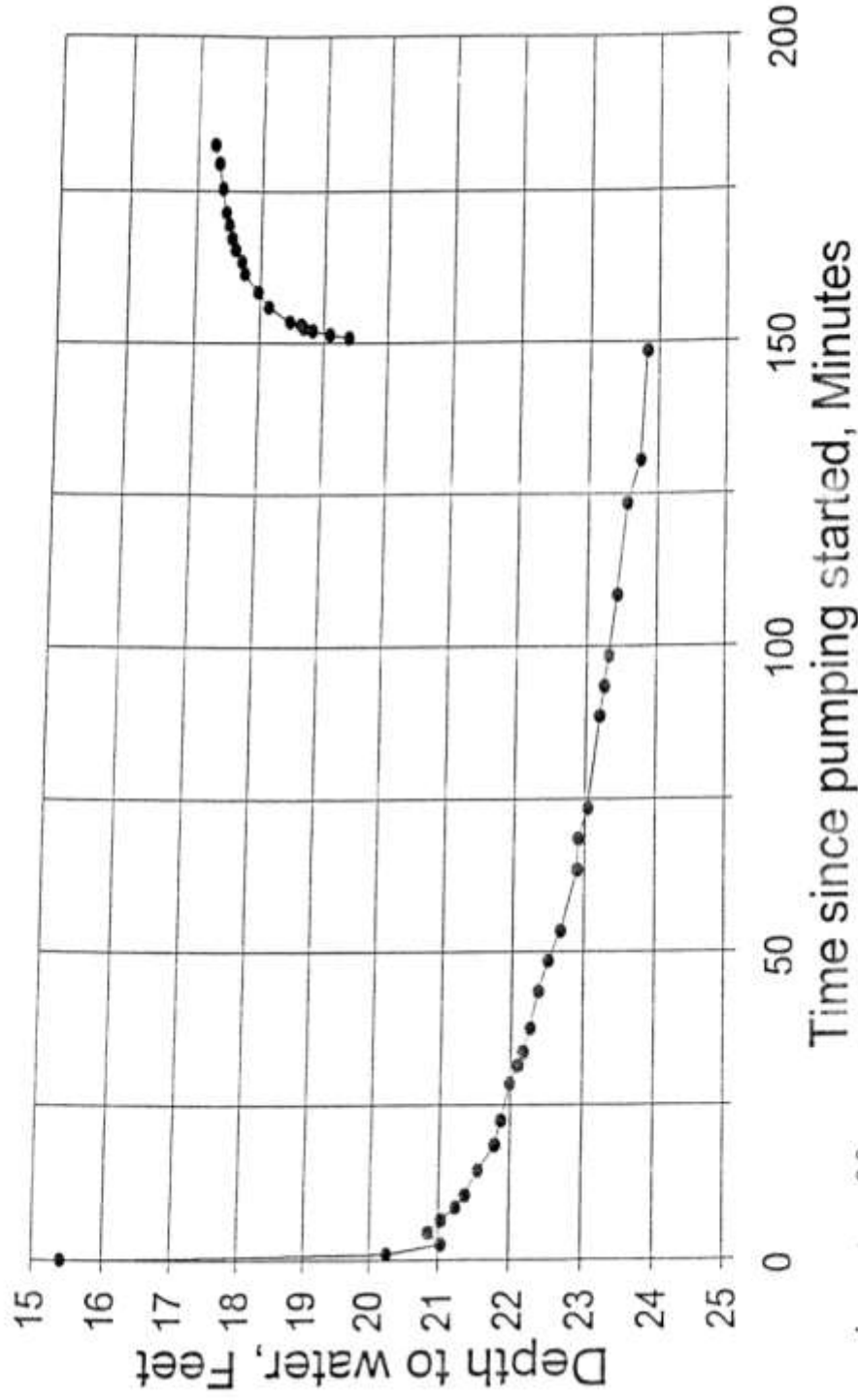
ACTION ITEMS:

1. Assist the park with any necessary paper work to complete the State permitting process.
Responsible Party: Larry Martin. To be completed by: As requested.

Attachments - Hydrograph of water levels during testing
Well construction diagram

DINO, Gates of Lodore

Drawdown and Recovery Test, New Well



Pumping rate = 30 gpm
Pump off at 150 minutes

Park	Dinosaur N.M.	NATIONAL PARK SERVICE		Sheet
Area	Gates of Lodore			of
Project	New Water Supply Well	By L. Martin	Checked	Pkg.
Feature	As Constructed	Date 10-21-96	Date	Account

