Pump Data # 5
IRRIGATION INVESTIGATIONS,

OFFICE OF EXPERIMENT STATIONS,

U. S. DEPARTMENT OF AGRICULTURE.
Miss Noble 3d house N. of Ellinor
3/4 N 1/2 W

Truck

Rule - 2 1/2 mi east
Well in town
Geo. W. Jones digger 2 Elk NW 1 RR 1 E
1930

Thatcher Ranch Bar YO

125 A. of Broccoli & cauliflower under contract with Stanley Fruit Co.
Floyd Smith, Mgr. Crowley

90 A alfalfa & grain under East plant.

About 60 A under River plant Corn & alfalfa.
6" H.C. F.M. Co. pump run by tractor.

Dr Outland plants
Soneyer-farming
N plant alfalfa to be cleaned & strengthened. About 30 A. to be watered from this plant.
S. Plant requires weir in outlet box which is 4 ft wide & 4' deep and about 7 ft long figure on 6 sec-ft.
probably 6" flume.  
Some bank building + protection
Timber turnout and 30' of ditch to make

Stubbs
Requires 2 recorders
for 2 sup. weirs
March 15
300+ acres of everything

M.B. Brown  NE + NW Sec 5  200A

Bob Creek ditch has rights for 160A. But makes it do for 200A.
Probably 9" would do but better use 12" flume. Set in ditch with good fall near K.C.B.

W.H. Sawyer pronounced Sawyer
1/2 mi. W of Fowler
25 A. Set 6" flume below bridge - may need to raise bridge

15 HP FMC 2 Z engine - kerosene
5" American HC pump 7527 p.m.
Stanley Labore

112 1/4 A under Oxford 22S 59W
21 shares from S side which can be measured at point 200' s of his corner. Good fall in ditch

Land steps so that strip 200' wide & Yumi long on N side has to be watered from another lateral which runs 145 shares independently.

Oxford ditch has 135 S-f & 110 s-roles

March 5th

W.G. Brown  SE  Sec. 30  22S 57W
90 A under Catlin 184" max. flow #70/1 inch value

Chas. P. McClure  SE  Sec 31
157 A. Under Helen 185" water

Kels Christensn on old Riley place belongs to Mass. Porteous after
about 140 A under Oxford Farm is almost inside Long and water comes thru line of ditch from head gate. There would have to be lead gate. Road to it on private property. Also
OK in deep ditch for pumping
Joe F. Kouns, 80A under Oxford
Has 105 rights.
9" flume, good location
This place was used in duty of water
work
SE 4 Sec 26 2 2 5
May use a little water before
March 1

Remes + Doleth

200A total
100A under pump

2 x 6 timber well 18 yrs ago
15" punt casing 25' gravel nut
8' dia. well 9' deep 5' steel
casing inside.
4'' H.C. American
Tractor power

W. R. Lewis

Dug 16' dia timber 80A

5' H.C. Drepper pump
2 1/2 HP engine
Not used 2 1/2 yrs.
John Mumm

Well 48' deep 28' to water
pit 5' 20' 15' casing
11 4x6 42.A.
4' H.C. F.M. Co. pump.
10 7  F.M. Co. motor

Mrs. Houston came to Mumm
Dr. L.G. McClain

June 22 1930

Dickie
Casing has been pulled from
the first well which was no good
yielded probably 50 g.p.m. Today
found the 2nd well being
pumped which was delivering
fairly 8-9 g.p.m. 45' off.
South of this is the 3rd well 54 feet
deepl 1 4' Rags and 2 other men
were just getting ready to prime
the cylinder of 4 1/2 pumps. When ready
the action was almost nil. Water
shouldered about 2 feet. We decided
that pump was sealed with "fire clay",
small quantity brush of proximity
will and two loads of fire clay
ground were tried out. 3' Groove
from below casing. Sample of mud
from the 2nd will was taken and
(3) Method
4 collecting 0 5 may not be best 2 in grumpy
breaks one in case board box which got stuck
opened. Bottom 18 in slowly casing odd casting from 1st well 2 1/2 will go all
Obvious lasing
July 1, 1930.

Conversation with Oliver re. well experiment.

Cygnum location has a lot of soft stuff just below water level that would have to be paved off. Thinks Blainton location OK. as to gravel & depth. Pretty deep & water 40' increased cost.

Remembers that test well for Stimpson was located where highway now is about 200' of track & about 70' deep still in gravel. Not far south nor east of gravel. Thinks Olinger tried best but the Stimpson.

Addressed seeing J.C. Ottean at elevator Pottsville. This man could use well but cannot see financial return now. Ottean has good place just north of Williams.

Stevens has one well down 54' feet. Engdahl has put down new well inside of pit 16" 22 feet deep rule 3/6. Thompson casing. Days motor pump. Started up pump. Q by floats & stop watch is about 14 gph. H. drawdown about 3 feet (mean.) Total lift 16 + 6 = 22 ft.

Melt 15 amps Wh. OA. 200V
15 rev in 54.4 sec = 5.28 ft
5.28x90 = 478'

* Why does it burst? *
July 1

Wanted me to see Paul Boresen on river west from Williams.
Stopt at Carlsons. Good flow of water at least 3 of
my leak shows motor doing
about 30.7 lb. 30 H 440 G.E.
motor.

Met T. P. DeLotie here and
drew my attntion again to
the first Watt bank Island
across the way. This seems to
look better to me now. I feel
quite sure that a well could be
obtained 1/4 mi. S. of Carlsons
Willing to pay $1,000.
Notified the Cquin Bros at
their well which is west from
the Bank 160. They have put
down a 16” casing in bottom of
put 15’ deep to 32’ flat. All in
gravel. Olives casing.
15” V.C. American piping, used
tractor. Est. flow 400 g.p.m.
Did not hit clay.

Drove to Rasmussen. Found 6”
Jackson H.C. pump short belted
to 15’ 2 G.E. motor. New electric
installation. Plans to pump
from slough. Drove to Pickham
to see if they need a large motor to
meet demand.
Thinking seriously of Kimball
Krough lift pump.

Called on Clark again, says
willing to pay $1000 for well
location would be on 100 north
of his house in the S.W. cor.

Caywood Bros tell me that
their well is only 12' deep
below bottom of pit which is 18
deep. They do not know about
the clay depth. Clark is sure
that it is at least 50' to clay and
no quick sand.

Jul 30 looked at plant
and test, 2 sec ft. Total lift
est. 3.3 ft. Meter with 0:4
50 amps. 20 rev. in 73 sec.
= 17.6 x .90 = 15.87

Lutrell

Has 6" new Dempster pump

Aug 1929. Meter today
around 15.7 x .89 = 13.9 P

Total head = 31 + 4 + 2f = 37

Q est. 1.5

W a t e r 77 = 6.3 P

Looks like something haywire.

They think that new pump gives
just a little more water than
old. Last July 77 is 8.3
J.R. Benallo
SW 1/4 Sec 32 25 67 W
Well conc. curb 4' with
14" casing in bottom total depth
28'. 15.5' water
drawdown about 5'

Pump 2" H.C. pump belted to
5P 10 Wagner motor
Instalfeed Dec. 1927
Original gas engine in well 1919
Train to well in on side

J.F. Heusi

NE 4 Sec 6 35 67 W
Well 3' conc. pit 7' deep
and then a casing.

2" HC pump belted to 3P
10 Century motor

M.W. Ziegler
Well 26' deep 6' pit conc
8' 1/2 deep 12" casing in
bottom 17 1/4' deep to rock
0-10 soil
10-26 gravel
Water stands 11' Drawdown 7'

2 1/2" H.C. American 135 gpm (Tank)

H.P. Dempster
F. G. Gibson  
NE 4 Sec 6 T35 R67 W  
Well - 3 ft conc. pit 6 ft deep  
14 in casing in bottom. Total depth 17 ft. (max.) depth to water 8 1/2  

C  
1 1/2" H.C. pump belted to 3 1/2 HP Ottawa engine  
2 1/2 A - 1923  

Blanch  
NE 6 T35 R67 W  
Well 4 ft pit casing below 10 ft to water 19 ft deep  

J  
2" FM H.C. pump belted to Ford engine T  
2 1/2 A - 1923
Bert Carter T35R67W
N.W. 7/5
Well 8½ conc. pit 22' deep
casing in bottom. About 24' to
water.
2½" H.C. pump direct conn. to
3½" Wagner 19' motor 20' down.

Thos. Fincher S.W. Sec 5 T35R67W
Well 14' conc. pit to 22',
then 16" casing to 43½' (mean)
25½' to water.
1½" H.C. pump belted to
3½ F.M. engine

H. G. Smith S.E. Sec 5 T35R67W
Well - 3' conc. pit 42' deep
18' of 14" casing, 44' to water
Some clay - 3 streaks of gravel.
Drains down about 8' Disch est 100
2½" Y.C. pump
10 P Dempster engine
2½ A. 1920
Robert Longstaff

S.E. Sec. 13 35 R 67 W
6 wells in conc. pits 13' deep, 14" casings in bottom
Total depth about 24'
Depth to water about 14'

C 4" American H.C. belted
5th Century 10' motor
25 A.

K.G. Fischall
S.E. Sec. 6 35 R 67 W

Well conc. pit 16' deep, 6" dia. casing, 14" total 20' H', to water.
Draws down to 18'.
Fine gravel under sand - On Shale.
2½" H.C. America
3 HP 19 Century motor
3' corral head, talked with owner about.
C. L. Montgomery
SE Sec 32 T 2 S

C 14" casing, 28' to water
60' deep.

David Fanelli
SE Sec 29 T 2 S R 67 W
45' deep, dug, 4' conc. curb
15' of 4" casing
42' 0' to water.

Sump V.C. 1 1/2" American
7/8" P motor, W.H.
10 A. Well 1912 Elec. 1926

Concanetta Russo
SE Sec 29 T 2 S R 67 W
Well

2 1/2" V.C. American
Ira Rodgers
NW Sec 32 T125 R. 67 N
Well 26 ft. to water 3 1/2 conc.
curb to water 14" casing 11 1/2 in water
12 - 26 gravel
stopping gravel
2" H.C. Aurora
6 HP Nicolaus engine.
4 1/2 A. 1927
Well draws down abt 4 ft.

Called on P.D. Sheppard, my C.C. Prv. to 4:20 to 6 P.M.

Says that as respects Bank property he would run in pole
drive and furnish transformer
if they if Bank used lines
if it was to be removed then
we would pay for 400 ft.
Rates would be regular tariff
Julesburg

Min. demand water
City - 400 g.p.m. for 5 hrs
R.R. 5 am but may increase
Summer
City 700 g.p.m. for 22 hrs J.G.A.
R.R. max A.S.O.

Possible hp & capacities
at 88' head

25 hp - 900 g.p.m.
20 hp - 675 g.p.m.
15 hp - 450 g.p.m.

About 12,000 12" pipe
El. top tank in town 35'-9" 120' high to top 100,000 gal.
El. top hill near wells 35'-8"
El. ground at wells about 35'-8"
35'-7" to water

Proposed top of tank at wells
at el. 3680 200,000 gal. cap.
Gradient tank to tanks 4.47 per 100'
4-300 gal pumps proposed @ 16'75"
12" wells @ 75'-20" 100' deep
200' apart
180' head
600 gpm - 40 hp
400 gpm - 25 hp
300 gpm - 20 hp

Recommended features
15" GI. casing
test hole on site, great energy
plan 3 wells first, 400' etc. min.
develop & test
Immediate max cap about
1100 g.p.m. say 2 - 600 g.p.m.
and one 400 g.p.m. pumps
Engine on 600 g.p.m. pump, 120 psi
Standpipe at wells 100' + 2', in
dia. 100' high or 50,000 cap
standard tank

Water Analysis
Incrusting solids 12.87 46.24
Nov. 15.69 20.85
grains per gallon

W. E. Law, Mayor
E. D. Chamber, Dept.
Trustees
Frank Deich
R. R. Johnson
W. J. Jenkins
V. P. Peterson

City 1732
Paul Holmgquist, Byers  
Sept. 3/1930  

Talked with Charles H. who told me that the 12" well was developed by air for 3½ days. In 1928 they observed that the 10" well 150 ft. away lowered 3½ ft. in 5 min. after starting 12". In 1929, 12" yielded more water and the 10" well lowered 4 ft. in 5 min. The 10" well was lost by a torn casing.

The 48" well. When first pumped water lowered to 75 feet. Pump size 60' long 15' shaft. Pumped for 10 days, and well improved a lot. The Beadman engine shored off its full sized anchor bolts in ½ day (6 of them) and secured around on hose. Two 12" wells were then put down 30' each side of well about 85 feet deep. 2 and one 10" 58' deep 10' south of 48" Each was "blown" by an. Before blowing 12" well lowered only 1 ft. when 48" was being pumped. After blowing the water lowered 14 ft. The main well now draws down to about 45 ft., and yields about 2 ½ times as much water as in 1929.

Bennet - Williams a well drillin' in B. says it is 90 to 100' of water here and may find 25 or 40' of water bearing sand above shale.
Gerrard wells — Wells are 22" set inside of 36" blank. Cost about $18 per foot. Each plant cost about $2200 complete. Sawhill.

Water data from M. Bauer

Oxford Farmers Ditch
Has 130 acre-feet total approp. for 115 acres. 2/3 acre considered youth about $400 and infact for 5 A. No water changed hands for many years. Co. organized 1882 sold land and stock sold for $30. Lands sell for $1.50 up with improvement. Assessment for 1930 $6 per share for 1931.

Rocky Ford Highline Canal

Water about $750 per share low $500 high $1100. One share for 10 acres. Rent for about $75 per share.

Colorado Canal
Right for 80 A. duded and reclaimed. 1 right = .08 acre-feet for 100 days.

Twin Lakes — 1 1/2 shares for 70 A.

Lela Meredith — 1 share per A.
June 16 1931

Arthur Batman
NE 4 Sec 26 8 N 66W

12 ft. conc. block well
24 ft. deep
17 ft. to water

Small V.C. pump. Used to be driven by motor, but now driven by tractor. Flood water entered well last summer

Hatfield 1/4 mi. west

J.W. Pretty
W 4 Sec.

3 wells of conc. blocks on timber shoe. West well 8’ dia.
others 10’ O.D. Depth 31 to 32’
Depth to water about 21 ft.
Water in gravel
Wells about 400’ apart
Equipment same in each well

3” H.C. Deming pump D.C. &
5 hp GE motor
Center well yields approx 100 gpm with d.d. & bottom valve 4 turns open.
West well best 2.25 ± 0.5 gpm, with about 5’ water lift in well

Total 750 blocks to well, 15 blocks

1005 m. cat. 1005 m. cat. 264
Walsenburg - July 27, 1931

Extension Service trip. Left Collins with A.C. Allen about 11:30 and arrived in Pueblo about 5 P.M. Had planned to go down in my car and make side trips to Alamosa but changed route after Stanbrough told me of Stee-Hi Ranch-pond in valley. Arr. W. at 7:20 P.M. stayed at Klein Hotel.

Met C. Agent Allied at 9 A.M. Party consisted of:

Hudson - farmer
Maldonado - farmer
Morris Cooing
Tom Salinas
Tom Schaffer - farmer
Wm. Schaffer - agent - real estate

Drove first to garden tract Less than 1/4 at south edge of town. Miss Coppellini to see well and pump under house driven by 5 HP motor. 3" H.C. pump.
Well is about 8' square about 20 ft deep to rock. About 8 ft to water. Daughter says they can pump about 1/2 hr morning and evening on average. Longer during rainy season. We came back at 6:16 P.M. to see pump work. Started up and quiet in 3 min. Was told that was all. Time was but shorter time than in A.M.

Drove to Maldenado about 10 miles up river. Has square well about 40 ft deep with 12' of water in it. Stop on shell on conglomerate which was punctured and a softer material found below from which yields water. Material above fine containing very little gravel and duty. This shell is not on true rock bottom. Has equity, pump & tank system in stock.
Drove to head of Martin Lake ditch to look at conditions. Mr. Schaefer wanted opinion as to feasibility of pumping into ditch to augment low flow. Flow of about 4 cfs in ditch at heading today. Probably could get well there but all would be lost in 4 to 5 miles of ditch above reservoir and as much below. Also reservoir covers 200 acres. Opinion - not feasible.

Drove to Harrison Ranch 3 miles below Santa Fe and inquired about well dug many years ago with idea of pumping to top of side mesa (60-70 ft BGS) but decided against in with help of J & B. In about 1925 this well 12 ft deep and 4 ft to water was pumped for 8 days and
nights steady to supply Waterbury huge line tons
than closing flush. Pump was
6" as recollected by Mrs. H. Ditching
pipe still then is 10". Gravel
see Mr. Fish re. Q.

After lunch at Possibly So Uta
drought ranch of Geo. Holmes
who had dug 25 x 75 ft trench
a few feet into water near creek.

Very shallow to water. Has 2½"
14.0 pump, 25 discharge
connection. Can pump cast in
a few in to creek bottom
contains mostly boulders many
1½ ft and over. Probably not a good
water yield. Material holds nurse
until 20 ft deep. Mean about 12' 27
water. Advised to continue
work on trench after explorations
method of putting down casing will
believe it would be difficult
to sink 15" casing.

Drove to Smith Bros farm
and looked at several wells
spots including one whole pond.
spots are wet from outfall.
migration season grade tule
pond freezes in thick mass in canyon
considerable pressure below and
a source probably from a
side canyon to southwest

Then are several other spots that
are spaced in line with this canyon
which usually runs a small stream
of cypress trees show ground and boulders
in which are produced. Fall
from tufa pond to creek probably
a small stream 5-6 ft high. Some
till drains 4-6 ft wide long
an upper edge of this area
successfully drained land
spring at head of this area.
Possibly analysis of water would
show origin These faults are
in no urgent need of well
water but could use it in
connection with drainage.

In many cases along this
stream bottom wells should
allow raising truck corps and
I believe these wells could be
obtained from a short distance
above. Watering for 15 ft before that
condition are not just dam broken it
School
San Luis Val
16" well 15' deep all in sand and gravel - no hard pan 14 ga
1/8" puffs
6" x 7 1/2" Dible suction 2 1/2" hard American - Marsh

Drawdown test about 12 to 18' below pump. Disch looks like 500 g.p.m.
Auto engine set on top of well.

H.W. Kelley & Bros
Bean tunnel 8" disch

Farmall tractor

57' deep 15" at about 30 feet hit a foot of clay below clay sand, stoped on hard pan. Much sand pumped
J.V. Edg俨nd
SW 18 36 - 7

3 Wells 16” 27' deep to clay
6” FM pump
Caterpillar tractor 15-20 HP.

Crow Creek
T.E. Rowe
Sept 16 1931

10 1/2 mile E + 1/2 mile Both From
SW 4th Sec.

2 - 18” wells 27' deep
13 ft. gravel water level 8 ft.
# 10 Bean Turbine
Pump est. 50 m. 1929

Asa Decker

48” well 37’ deep
1 1/2’ soil
2 - 37’ sand + gravel
9’ of gravel
11’ above clay

Bean Turbine #9
7/4 F motor
est. 20 inches
2m. 25 a. potatoes + 10 a. beans
Davis
2 - 4½" wells

Timball-Kough pump 14 HC
Type CT col. 10" Head 8
Serial 3441

U.S. motor 15 HP 1200 F.P.M.,
guess discharge 650 to 800 g.p.m.
In bottom of pump well casing
looks like 18" into which suction fits
Water level outside 29.6 inches 32.2
from top casing

Wells
3 - 4½" wells
Bear turbine #20 head 8" col

Motor U.S. 15 HP 1500 rpm
Discharge suction takes air
Water level at 27.5
Meter 10 rev. 155.4 sec. \( K = \frac{13}{3} \)
Q about 800 g.p.m.
F. E. Gibson
8-12" wells 40' std
4 only hooked up now
Wells are 35' to 37' deep
12' to water normal
15' about now.
21 to 17 feet of water general
0-12 soil

Pump Dempster 6"
20 HP motor - Wagner

Has to raise water 10' above ground
Wells are along side of land bank
Hardly 1/2 mile from east side of valley

M. Taka hashi
48" well 9' to water
K.C. pump tractor driven
16" ditch.
Mar. 18 - 1935 Walsenburg

Drove from Pueblo to W. arr at 3 P.M. Looked at site of Community Gardens 5 miles or so below W. on the Cucharas. About 10 acres now being plowed up. About 80 ft to water in one well at about proper elev. 10 ft at another lower down. Water here used on small garden last year for house plants without injurious effect. Water taste bad.

Evening: Met with a group of 100 or 12 informally on wells & pumps. The problem here is an effort on the part of business men to get miners to raise some garden truck to offset their loss of time at the mines.

Mar. 19 Looked at the Creamery well. Concrete cut 10' squared.
Feb. 21, 1932

With Carl Robinson at Eads
Bishop in Pueblo. Decided to look into Arlington business.

J.W. Finnup of Garden City is owner for some years. Judge Aldrich of Ordway has leased unde a contract to put in 10 wells by June, one on each 140 A.

J. Osborne is local mgr.
Located O. and went out to well in NW Sec. 33 T 19 S R 5 3 W
16', 30' deep sunk inside 5' blanket claims to pump 350 g.p.m., with 6' water lift in well. 12' to water

soil. 0-10 soil, 10-14 sand
14-15' clay loam gravel under 1".

Equipped now with 8" Western

turbine and 5 HP. Dempster
engine very short belt. Says can't
get engine up to speed - overloaded.

Davy of J.C. consumer. His name
is only pump head, part owner of
Western Pump Co. at San Jose.

Total cost $4,000.
Drove north west to Sec 36 T185 R54 W and located at Mustang Cr. Talked with man at Brook West ranch who says tests have been made clear across valley without finding any gravel. Well at ranch 15 ft deep goes dry in dry years. 12' to water normal. 16' when lake is filled.

Drove east from NE corner see 36 2 miles. Some flow (1/4 acre ft) in Adobe Cr. Drove 7 miles north after stopping at 2 places finding no water. At point 2 miles north and 1/2 mile east is east branch of Adobe which is much smaller than west branch. At ranch found well 19' deep with small amount of gravel. Gravel is only 300 ft wide as found by digging wells. Man said trail branch 7 1/2 miles could last for 10 to 15 feet.

There is a dry salt lake in Sec 27 185 50 W on W. side of several hundred A. shallow with water in ground depth.
Feb 22 - Met Mr. R. J. Philpoy Pres. Miss. Land & Colonization Co. in street. I took it that this Co. might be willing to finance the Arlington project if financing failed. Said we would notenter field till then. Said that on his place ½ mile is so do. of Boom Best ranch that there was well with gravel in it. Drove to Arlington with Bishop. Stopped at Mr. Woodwards which is a Sand & Co. about 3 miles due west of Finney plant. Said he had put down 42 5-wells on various parts of his place & found no gravel. Water comes out of shallower course at 23 feet. Water stands at 12 ft. Best farm thinking he could get irrigation well at $2 5/acre in 19- A well 1¾ mile east has gravel in it. Water in W. wind well is no good for human consumption. OK for cattle. Water peculiar. Well 50' W. is better - can be used.
31' deep, 14' to water. Gravel 14-31 then shale. Max cup 35 to 40 g.p.m. temp 45° 45 gr. hardness.

With 5 others drove over on to Terrebonne and looked at old "oil" well which flowed very small stream of salty water accompanied by gas bubbles. Well is on Spoilders place. About 3 miles above here on Mexican place 8' to water. Spoilders place must be about 1 or 2 miles west of highway.
Melville Project  
With V. Stambaugh June 6 1932  

Karl Ziegler - S.E. Sec. 35 725 R/W
Price turbine 12" 2 stage 8" O.D.  
col. 1800 rpm. Ford Model A
engine with Fordson radiator +  
special clutch. 1/4 turn V-belt
Pulleys 13 1/2" 9 5/8" crts. Gates
#2 Vito rope Steel frame
shelters with cor. G.I. sheet cover
Cost $225 without concrete floor.

#2 & #3 Same above in N.E. of 35

#4 Ironton well 24" 52' deep
S.E. Sec. 23 25 S/W 14 90.
16" +. water.
Well tested 3 days - Heaved once
and casing was settled. 1100 g.p.m.

#5 Putting in test pump
N.E. Sec. 23 Contrator
Yorkville
June 8 1932

Test started yesterday with small tractor. As nearly as I can make out water started then stopped and well heaved. They put on a big Avery tractor but no water. When I arrived at about 11:15 they had taken off 10 ft of col. and water was coming in gulps. 10 ft gravel in well. Pump was 30 + 6 (for 4 stages) + 1 = about 37 ft long during test. With 3' weir it appeared to pump 150 g.p.m. Pump pulled and rig broke in. Pulled out coarse gravel. This well 18" 1490 was placed inside 30" blank clear to bottom using pea gravel (about same as Greeley). Casing is 57" 9" long net and is 2 ft in clay hole made with 16" round flat bit. Water level at 12 ft. While sinking 30' had gave in from W. to the hard lime shell
0 - 2 - soil to hard lime shell
2 - 32 - Clay + gravel mixed
32 - 40 - Coarse gravel + sand
40 - 42 - Yellow clay
42 - 49 - Fine sand - some gravel
49 - 51 - Clay shale
July 22, 1932
St. Morgan -
Platte St. Well 2/24/32

Soil
0 - 130 sand
130 - 140 clay
136 - 142 gravel, getting sparser as dug down & colder
24 - shale

15” Blanx (70 #) 5 1/25 buttting with
12” 1099 83’ long with 10”
of black 12 slip joint. Gravel between
39’ to water

Analysis

Solids in Soln: grains/gal

Silica 1.17
Oxides of Fe & Al 0.42
Calcium Carbonate 9.72
Calcium sulphate 4.76
Maganese sulphate 3.17

Granulating solids 19.39

Alkaline Sulphate 9.98
Alkaline Chlorides 1.96
Nitrate .96
Organic Matter and
Non-organic solids .37

Total Solids 31.66

Neutral to phenolphthalein
Fulton Knight 7/25/30

C 0 - 131 sand
131 - 135 clay
135 - 226 gravel
easing 15” to 175 ft.
19” perf below
35’ to water

J. H. Roediger
Pres 1st Natl Bank
Ft. Morgan

W. E. Eriksen  NW 12 3N 5W
24” well 46” to water
Old L & B Pump
Using steam tractor for power
Trouble with leaky flues
J.P. Curry - 1 1/4 miles W of Main St
220 acres
16" 1090 1/6" pprf.
water 14" water

0 - 5
5 - 44 sand
44 - 59 muddy fine sand
59 - 75 yellow coarse sand
75 - 77 clay
77 - 83 blue finer sand
83 - 105 clean sand
105 - 14 fine gravel
Rod on main drain (12") app 50.
Branch - 9.6

Top of hill about 200' W
of well site is about 2' above Hi
Well site - rod - 6.2

Point 300 ft E to foot of
slope 5:4
Top of tile at wells site 12.8
Sam Corsentino
July 26 1952
Pump running with valve partly closed. New pump
Price turbine with 7/2 hp motor
Load-meter G.E. D7 15 amp
$k = 3.6$
20 rev in 30 sec with pocket watch.
Naigle Realty Co. July 18, 1933
Colorado Dys.
Templin Gap
Detention Reservoir
is in SW 4th Sec. 28

13S 66W
4800+ Acres above site.
East 6000 see. ft by
Naigle land is about 1 mile
above Naigle with nearly same area.
Near SW 4th Sec. 27 Wnld.

See sketch in latter file
under Naigle. Dogs given.
Sample of sand under blue play
station at test hole #8 tested.
2009 in sample

<table>
<thead>
<tr>
<th>Screen Opening in. Cm</th>
<th>%</th>
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<td>10</td>
<td>1.7</td>
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<td>14</td>
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<td>2.5</td>
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95% is smaller than 1/16 inch.

Test holes are in bottom of channels
about 15' deep. Do not believe that
pressure exceed 5 feet above bottom
from R. M. Canyon experience with auger
and sand bucket.
District Land Owners Trust Co.
J. B. McVitty
July 19, 1933

48" well of Oliver's on Ziegler place.
Bean turbine run by Hart-Parr tractor. A set 599 at 740 g.p.m.
Depth to water 43.7 - 1.7 = 42.0' Top Casing

Windmill 175' N., 2455 top of casing 0.8' above ground surface.

Original #1 plant is about 350' N. of
Oliver. A set 400 g.p.m.

A second well 24" in 45' N.E.
of #1. Bean pump. Ford engine unit
V belt. Est. A 500 g.p.m. 49.2' to
water from top of casing at 9.5.

A. Oliver says 18' to water before
pumping started.

48" well 1/4 mi. N. of #1 Bean turbine
Well heaved. Q diminished. 6 socks cement in bags
Ford unit. Est. 400 g.p.m.
Depth to water from top of casing
41.8 - 1.8 = 40.0 Casing sticks up 0.4'...

2nd well some equipment 200' E. not
running and can't measure to M.S. Said to
produce about 200 g.p.m.
#2 Not running

#3 Est. Q 500+ g.p.m.

24" well ½ mi. N. of #2 F.M. turbine Allis Chalmers tractor

Est. Q 700 g.p.m.
Depth to water top casing at ground level 40.0 - 1.8 = 38.2

59' pump

Sundoal well = #4 Est. Q 1000 g.p.m.

½ mi. N. of #4 above ditch "G"

48" 15.85 to water top casing

1.0' above G.S. Bean turbine

24" well 500' E not equiped. Met my Rich geologist here

48" well near center Sec. 14

Had just started up pump with tractor - Price turbine

24" well in Sec. 11 Simpson from Derby? driller 40' deep.

19.95' to water from top casing

Price turbine
24" well in Sec 2
Price turbine pump
22.17' to water  top casing at
65'
51' deep
Byers - Oct. 10, 1933.

At 9 a.m. with party consisting of

E. O. Cooper - Liberal, Kan.
Mgr. J. W. Doughman
8,000 acres about 1/2 in
Bijou cotton mostly in
1 + 25 and 60 + 41

Roy Skinner - Bennet, Ne.
Tri Valley Irr. Dist.

- Miller, President

Byers State Bank

Drove about 15 miles north in
the Bijou Valley in Cooper's car.
This is farther than I went with
Merrill in 1930. Valley is 30
4 miles wide in places. Had a look
at the Vile Dist. head gate. Head
gates and spillway still intact
about 1/4 mile breast in dam
across Bijou.

While eating dinner at
Coronado with Cooper, Merrill
came in. Had some talk with
him. Says he is 50 year old. Told
us of pinto bean loaf made in
Calif. and sold in cans. Gave us a
slice - eatable. He recommended
alfalfa tea.
In P.M. drove with same party and Jim Price to Holquist wells. It plans to do more developing with air and has both a 160 cu. ft. compressor 2nd hand. May start in a month. Says 48" well has fallen off. Since then there has been a lot of going around it and the S.W. development well wouldn't wonder if formation hasn't sloughed. Says it costs $1 a day more to run 35 hp Bessemer than 25 type N, P.T. getting no more water. Price labor in 48" well too big.

Oct 11 - Prospect area.

Martin, Alden and Aldo and Vogt found that John Dane units were not large unit. Sold at 42 hp but factory man from K.C. said 30 hp to steady load. L-W refused several such units. Vogt replaced his with 50 hp Hart-Parr which uses 56 gal. coal oil per day. Both units worked O.K. with 7 1/2° distilled but carboned spark plugs. Martin had values ground one and blustone gasket.
Zimbleman got a 75 hp type Y from man Hardin which cost him $1200 on foundations. Uses cut just above Diesel oil at 4 1/2 & Oneida. On regular load pumping more than my test of 1350 g.p.m. used 85 gal fuel per day and 2 gal oil. At full load 725 gal per day. Had accident which cost $400 when idler pully dpt and belt broke off pump head and bent shefing. Well pleased with power. Woght would like to get 50 on 60 hp type Y engine.
Yesterday talked with J. H. Wells at Alamosa who with his son is present putting down an artesian well in the city in S.W. part. It is 17' at top and about 400' deep. It is intended to be pumped. Wells does not have much faith in pumping artesian wells, the idea is one of the town water boardsmen. He is of the opinion that there has been no diminution of flow from the deep strata in town (1000) as evidenced by his wells and neighbors, but those of lesser depth have been materially lessened. Would be in favor of law conserving flow. Pointed out that some apparently abandoned wells were far grazing stock. City pump is unsatisfactory depth seriously affecting all other wells at that depth.

At Monte Vista, J. E. Ward and Carter are owners of Rio Grande Hardware Co. Smith and Godbey have persuaded them to be agents for Bean pumps. W. told me in long talk that he was not in favor of pumping because the farmers were more or less stupidly sold on subirrigation and the two are not compatible. He things that the sand will finally go bad as did the plants around Provo and Mesa but will take longer. This year is one of shortage - very dry season and difficulty will be had bringing up. Ewing says putting in plows are doing as
against their will but are
preparing themselves. Draining has protected the district along the west county line from being sharper but makes it more difficult for those above to maintain soil. Some land near Moea being recovered by washing and leaching recently and
fertility is still there; ground will be leveled and no crop first year
maybe not second. W. thinks if
fields are drained open and
Moea again will be garden spots.
A year or ago when water was
flooded when a strange high and it
died. Ground got hard. Cause:
Sub irrigation keeps ground surface
so soft as to make flood
causes it to exist. Of course
as increasing to raise sugar beet
because of labor. Can't go
fishing as much.

Learned I could find out what
Kennedy (well driller) was there
Henry Olds or called him up.
Today talked with Olds and Kennedy
and Schwartzburg and learned
of more talk of irrigations on
their irrigation wells. Some of
these days a quit will come to
trials and if it is in this valley
the decision may be influenced
by local conditions and not
strictly for the state. Heard
more about ideas of drilling
down in the bottom of draw, irrigation wells to tap artesian flow. This will be bad. Kennedy and Olds quite willing to oppose this. I convinced McPherson of Walsenburg about this. Believe old law can be enforced on this. Am not so sure that a deep well properly cased and controlled and used for irrigation a wise idea. Best artesian wells are southeast of here.

June 4
Went with W.E. Trickle (Hotel Grand, Monte Vista) to Del Norte. The Rocky Mtn. Produce & well about 2 miles south of road and just east of town is high up in a side drainage channel. Flow sounds as if the well was turbulent. Has 200 K.T. pump. If well estimated flow is 2000 gpm. Plan is to develop it. They don't seem to understand the office of testing wells here.

Soho is miles west of Del Norte and
July 2 & 3, 1934

Trip to the Clinton Dairy 3 miles south of Colo. Springs and on W. side of highway by bridge over fountain. 

[Diagram showing distances and directions]

Mr. W.E. Donen who is partner and lives in first house east of bridge asked me to come down. Went by train & car. C.S. 10:30 July 2. Went to Ryan's office and he took me to Doak's. We all went to point 1 on sketch where 3 and 3/4" pump were mounted on same shaft and were pumping about 150 gpm or less out of 8

...
of slough they had sunk a 5 x 5 timber box about 4 feet deep. When pumping, water from springs flowed into box and some came in from sides. Because of difficulty in sinking work had been stopped.

In P.M. looked over the situation found that ranch house well was about 35 feet deep and water (bad) stood at 14'. As this was a dug well it looked as if it was all in hard formation. Well 150' deep at point 4 at base of mesa was mostly in shale.

Demes well was 86' deep and in gravel last 40 feet.

Log of E.C. Lippmann well at service station 1/4 to 1/4 mile E of D on highway SE NW " Sec 3 T 15 S R 6 E W

0-22 - sand
22-33 - hard clay
33-42 - water gravel
42-47 - hard clay
47-74 - gravel and boulders

Water at 46 feet.

These 2 wells are about 40' 50' above the river and are probably in the Rand Co. fan.

The highway bridge went 27' to shale according to Lippmann.
Original location at point 1 looked favorable for depth and for land 1 or gravel. Drove 1/2" rod down 25 feet, still in gravel, at point 1. This was 25' below water level in slough which was about 5' below ground surface. Drove 13' of rod at 2 and found gravel in slough 7 feet this is in low place. Drove rod 13' at 3 with similar results.

Point 5 is a small dry gravel pit along the ditch into which it is decided to pump and is about 600 or 700 feet from 1. Proposed test hole at 4 1/2 and if not good another between 1 and 5. Believe a fair well can be obtained at 1.

July 2. Ryan took Doner and me to Doves about 5 miles south of Fountain on old road. Not at home and because of lack of money was not going on with well he had started to dig by hand sinking square box less than 16' to water level. Another man (Williams) was putting down one of the joints of the old double watery line in a pit started by driving vertical pilings 1/2 mile south of Fountain and in east side of road C.
Looked at 6″ large case pump belonging to Mission 506 mile north of Fountain in mesa.

Morris Machine Works
Baldwinsville, N.Y.

#6 Order No. 36226

Nerison & Hubbel, Chi. Agent.

Mission says 1200 gpm, 25 feet
450 k.p.m., 20 bhp.
Aug 6 1934

Glentoy, stay on 13th well this season for Hasluck (cool water)

Oliver (incl Wakeham) 20 new wells
Oliver estimates Scarlet of 6ilt & Leach at Pierce 6 t's
new wells respectively

Hall - 6 wells
Graham - 3 Campbell - 12 wells
just completed 2d rig, have been working 2 shifts
Herring - Pepp - 9 wells - working 2 shifts

Thomas Gas & Electric load due principally to migration pumping
774,120 kw all except Quealey in July 1933

1,106,400 kw in July 1927
95% of this increase due to pumping

New installations
Quealey 16 - 178 hp
Cashel 20 - 200 hp
Brush -

Harness town clerk says he
notices no difference in the old well
at plant in water level this year
from previous years.

Keenesburg -

Mr. Alden says, that in June
after my trip last spring, some
pumps were pulled and water level
observed to be 6 feet lower than
last Aug., at end of pumping.

One or two other places this season
down 5 feet, maximum abroad 9 feet.

Count 4 new wells to be added here
to above count.
Memo on C.T. well casing
Brush Oct. 2 1934

From A. Waterman - Well of Geo. Plain, a 12" 16 ga. casing put in 9 years ago. That 10" suction pipe was forced into the casing when installed. This season well gave up its water. W. was called and he put on heavy pull with jacks on suction. Casing parted sticking to pipe, that is what was left of it. Practically eaten up - no sign of galvanizing on casing. Electrolysis? Closing of perforations due to rust.

Earl Peterson at Lynden had to put down a new well this in 1932 because he had not used the previous one for 5 years.

H.C. Kellogg, about a mile south of Lynden had W. put in a new well this year.

W. thinks Wacker's well went the same way as Geo. Plain.
Phylleps Wagner 5½ mi. SW of DLD
John W. Montgomery Ranch

For accuracy N.E. is added to wells to east. Says many wells including
his brothers driller, off in A

John Bernhardt  Sec. 12  S.E.
14.84 to water from top casing at 45-
3 original wells stop on clay at 35-
New 24” 10 ga casing is 63’ deep
first clay thin 1’ several other
1 and 2’ layers clay rest gravel
Dempster 6” V.C. tractor drive
drawdown 40’ for 900 g.p.m.
Cline driller

Stewart Weight-farming  T.C. Kogle

Ivan Anderson  N.E. 4 W. 1/4

15” 14 ga  50’ deep  Water at 15
0-8 -  soil + sand
8-50 - fine gravel + sand  Ed Goodrich
Pump 6” H.C. Dempster tractor
drawdown 15’
Starbird 500 wth fllplt
62” conc curb - 30’
58” outside dia conc to 58’

m shale.
Dempster V.C. pump.
Water level this year 34’
Pumps to bottom 4-500-500 gpm at

Oct 4 1934
J.R. Vanderpool
R 1 Box 13A Derby

Builds conc. curb wall as large as 12’ diam - Smallest 2’

2 1/4” - 2 1/2” wall 3’ reinforced
60” - 5”
12” - 10-12” thick 3’ fencing

Forms are 4’ long usually

Dug by hand to water gravel as unit
Curb. Below water orange peel (weicker) 4’ sections set on as needed

Perforations made with 1/2 to 1 1/2 star
Drill just before being sunk into water
about 1 hole per sq. ft. about 8’ long

6’ form is made of 16ga black metal with
3 3/4 x 1” bands welded. 2 pipes
botted. Inside form braced. Uses
1-5 – cement-gravel mix. 6gal water
to each cement
Others
Kruger - at Adams City
Cox
Peters - Adams City
Simpson - Derby

Est. 60 or 70 new wells Adams City
to Brighton, does not include river area

Well below Barr Lake for making a
duck pond. 76' thru soil into sand.

Expects shale at about 30-35

Wheeless orange peel at $7.50 per
lawn plus $3.50 per hour traveling time
 DH (Dan Lorenz Livestock Co)

Depth 74 24" jg 36' perf

Pump was started at 7:30 A.M.  Start at 10:30 A.M.  Started at 11:20 A.M.

Depth to water from edge of pump opening at 11:20 A.M.  15.76'

Flow 0.84 @ 12:04

\[ \frac{2.35}{270} \times 1210 \text{ gpm} = 90.2 \text{ m.i.} \]

Depth to water 33.8 @ 12:09

Pump speed 1085 rpm @ 12:11

Flow 0.92 @ 12:34

\[ \frac{270}{1210} \times 1210 \text{ gpm} = 103.8 \text{ m.i.} \]

Depth to water 35.9 @ 12:35

Speed 1202 @ 12:40

First well filled up to 39', where casing failure is suspected. 14' perf 70.5' 18' perf.
24" well 58' deep
Pump, Peerless No. 12 1 stage
Pumping - Drawdown is to first holes in strainer because discharge fluctuates.
Flume 59/2 = 1.38 acc. H = 620 gpm = 53 m³/m
Pump speed 1291 rpm @ 3:10 p.m.
Flume 58" at 3:37 No fluctuation
Pump 11.9 ft
Depth of water below top of casing 50.6
Specifications:
880 gpm at 50' head

LaSalle Rt. 2
40' Column
10' Strainer
5 ft
J. O. Lorenz  NE 27  4N  

2-24" wells 60' cfrs  
36' deep to shale  
12' gravel at bottom  
Dempster 1" V.C. Pump  
Depth to water 10' below GS  

Depth below top casing while proj  
24.6' (top casing up 0.5')  

Flume H 1/2' = 0.83 sec/ft.  
= 372 g.p.m.  
= 31.9 ml/in
Wm. Case - on Con Miller place now. Case had all wells of old plant cleaned out 1934 and a new 12" well put in as replacements. 4 ft to 4 ft sand in them. Miller started 6' hole 600' west 4 years ago and used a piece of 12" 16.99 1/8" perf. casing to up water hole. He had casing, 23" and when dug out by Case the single piece of perf. casing was 1/2 water short. Rust was mixed with gravel and dirt in place and almost an inch thick. Can't make out if this was under water all the time or not. Allgrant came in to finish job but didn't. Looks 3' of shale now. Oct 1934. Case says there is 11' of gravel here.

J. S. Dalton 48" casing in old timber pit shows much incrustation below water level but they do not cover the pipe to any extent. An older 12" casing in bottom of same pit shows heavy incrustation on inside below bottom of pit.
Denver Oct 15 1934

looked up C. Haven (a Mich 1932 man) who is doing percolation work on dams. Interested in change from stream line to turbulent flow. Data plots as straight lines on log paper vel 227 H. Shown one model of earth dam made of sand about 8" high and with water behind it and using a dye line of flow looked at:

[Diagram of a sand dam]

Days that dry placed + coded and give same density as submerged but moist is less.
Oct. 11

Conference with J.B. Melville.

Spent from 8 to 12 and 3 to 4:15 with him. He had me read over his report to PWA which he is to take to Washington next week that is the part pertaining to waters of Box Elder. He contended that these are flowing in a well defined channel, not percolating. Contends that the burden of proof that a pump is diminishing stream flow is not on the pumpers. Thus if “Jones,” a surface water appropriator enjoins “Smith” a pump, Jones must first show that he has an adjudicated right.

Third: that he has been injured. Fourth: that Smith is causing a decrease in stream flows. However if Smith should want his right to pump adjudicated he would have to show that he is not affecting stream flow
I get this as the distinction between percolating waters and those flowing in a well defined channel according to M. Both are moving but the former very slowly the latter rapidly. As one would distinguish between a stream and a lake with an outlet.

A well defined channel is one occupied by real course gravel whose boundaries are well defined and where velocities are high (He spoke of 700' per day) On each side of this channel there would be percolating waters. The two kinds of water merge in definition.

M. wants a project of 9830 A. As I got it 7000 was the commission figure. Its report based on Meech's findings contained following letter: Area of ground water reservoir 12,500 A. Using a 15% yield then each foot flowing would yield 1300 A ft 9,715 A ft (I don't know where this came from) would cause a lowering of 5.4' velocity (meter) 56' per day of the
Surface water. Inflow computed at 16,255 A.-ft annually, 6,940 A.-ft. during 5 months irrigation season of which 75% recoverable by pumping plants.

M. from Brito records show 3000 A.-ft pumped in 1933 with an average lowering of 2½ inches.

I confess that I do not understand where all these figures come from as I did not ask and were in Mrs. discussion of the report.

M. 6 seeing our well low believes that the groundwater law should be complied with it and is going to work out something along that line.

Oct 12 Called on Candler Sr at Littleton
Told me of 2 deep wells recently drilled. 
Flowed 359 p.m. #1 below #7 produced 669 p.m. and caused #1 to stop flowing. #7 Agreed not to keep his well open to help at a later date.

For shallow irrigation wells used cementing pipe and from Mutual Construction. Section coated together(4) with one section of pipe casing at bottom. Saw section of pipe casing only 2 yrs old with many rust spots.
San Luis Valley

Oct 15 1934
K. Ono Dr. Spradlin
Timber curb well being sunk in
S.E Sec 3 T36N R8E 16' to water
Vert. 2" lumber. Outside curb about 9'
square. Inside curb about 7'square
just started into water

Knapp

NW 12 36N 8E

Another attempt to sink a square curb
with vertical 2" lumber
Put in 6' square 18' deep 7' to water

W.W. The Elhiney
SE 12 36N 8E

6' square curb inside of 8' curb
down 20'. 6' 1/2 water.
W. Wemmen H.C. pump. Est by M 20 inches

D.E Ryher
SW Sec 4 36N 9E
Timber pit about 8' square 4' to
water. 15' deep
6" F.M. pump. Thinks he pumped 40'

C
J.E. Mott - S.E. 24 26 N 8 E

24" 12 99 casing 57' deep

Dempster 6 " Y.C. pump

16-23 - clay
23-57 - gravel
57 - clay

At 16' clay casing hugging up and pullers went 30' with open hole before casing moved to about 30'. Pump (Bean-Reddick #1) installed all but last joint. Next day found well saved by pump, and country moved. Casing finally went down to clay stratum. Trouble was made for the Anderson Dempster thru Big Jones Rdw. Est 25' pumping to bottom 6' to water

Kolby well

Kolby tried to deepen original well 10', but bucket caught stone bolts and casing broke. Started new hole
San Luis Valley 1934

Teodore S. Nake b. 1934

Theodore S. Nake b. 1934

San Luis Valley

1934
every other row. Such practice will yield around 50-60 sacks.
and put their pump in so late as to only make seed. Where no water was applied they would be lucky to get one sack to the acre of spinach.
Potatoes this year came from along the river and south.

Psalms Oct 17

Saw Clay and Chamblin in town. Spoke with Clay's
attorney in Preston. He will talk to him about it.
Chamblin is now running the
Bergum shop. He does not
belong to the Wal. Pitch assn.
Their atty. is also Preston.

Saw Galotti, who is putting
down several 36" holes for the S.
side City waterworks 29 to 36' deep.
The North side is putting down
12' gravel cased (old water tanks)
put by agitator torch under
direction of Peterson. These wells
are about 30' deep and they add
for 3 pumps 1400 to 1600 gpm
capacity. I say I don't
define things. I will do it inspite of tests. The one completed well
is about 2009 RM.
Trip south from Las Animas
Oct 19, 1934

Notes on card found correction in ink.
Original notes on card lost.
This showed mileage and depth to water in several places. These notes from memory 2 days later.

Object: To call on Mr. H. McQuinney who had been corresponding with Mr. Parshall on windmill installation.

00
1.6 At about 9 A M
2.2 Bridge E + W (East)
6.4 At about 4 to 5 miles on main road is first well on west side of road. One 5-watt
6-8 man has 2-acre garden and small rock tank. This year grasshopper cleaned out garden. Did have orchard that died out after a freeze when in bloom. Said one year he shipped 70 earloads of wheat from raised on this land.

17.0 Another well about 1/2 to water, 300'
19.0 At junction of Muddy C with Buck C. Found 1 to 2 feet of flowing water. C. M. Herring and in Buck C. Bottom found irrigation well put in this summer.

7.3 Osborne G. Mittey who owns a variety

Davenport drilled R. R. test holes, a mile below here.
He sunk 3 holes to 18 to 20 feet casing and finished off the upper 20 feet

We pumped 0.5 ft. of gravel

26' Vs pump 6.14' of gravel

12' Deep
At Pritchett found that McQueney had been there that Q.M. had received my letter and probably gone home. My letter asked for directions to my place and he left from Ojai. Inquiring found he lived 1 1/2 miles due south of Ullsville. Mc.G. is about 55 yrs. old. His idea was to pump water into a reservoir from several wells by air lift. Air to be compressed by a large horizontal windmill. He has no conception of work or power or the efficiency of machinery. Tried to show him the various losses in such a scheme. Agreed that the windmill could be used by direct pumping for 1 or 2 acre gardens - not for 160 acre farms. Then the idea he had was forcing the water thru pipes with compressed air.

Springfield 100 +

Was told at Grenada of an irrigation well on Two Buttes 2 miles east of highway south from Lamar. Saw water in the geyser as I passed over it in the dark. (W.M.)

22.2 Tooneville grocery store gas
46.6 Valley 1/2 mile wide. Small ranches
Water in pools 20' above bridge
53.3 Grant
60.8 Pritchett. R.R. well 250' deep 150' to water
   pump 3000 gal. per hr.
Oct. 21, 1934

Rocky Ford Well Bank
SW 1/4 Sec 3, 24S 5R W
plug to water 26’ 35’ deep to clay
18’
pump tractor

O. B. Russell SW 1/4 Sec 4
24S 5R W
20” 20” - 33’ deep to clay

Hannigan chiller
gravel
#4 Goodner 35 inches
drawdown 2’
on Timber Ct bottom

With H. L. Bechtold
B took me out to see a number of artesian wells that were not being used, leaking and needing plugging. We saw the old plant at the plant to be abandoned after destruction by the flood of 1921. There are 8 wells had each flowing a little. No telling what condition the casings are in and the leakage below. Get one time during the summer for 2 months they quit flowing.

At one small house he took a sample of the water from a well which had wood lining in the casing and at another sawed a sample from well with no casing. In a few
hours the latter sample had started to become cloudy with iron rust. A few days later the precipitate could be easily seen. At this latter well he showed me a piece of pipe (the upper section) which he had removed from the well which was almost entirely eaten up by rust. Indications were that the corrosion was principally from the inside. It was had formed which had been closed up again with a thick lime and rust coat.

At another location to which he pointed out there was a well lined with light casing. When the well flowed 30 gpm when new but soon began to drop off and finally quit flowing until the water level down to 45 feet. Any other well by the geologist to the same formation but less than 50 yards away was drilled and its water level stood at the same elevation. The first one certainly needs plugging or both.
Oct 22. Conference with J.W. Preston attorney, Mr. O'Keefe, Pueblo.

Pratt is att. for Southern Colo. Power Co. and Benson Mr. Stahl.

With A.G. Chamberlain called on at 8:30. The question was put as to the matter of the legal status of the use of groundwater or irrigation. Is one that could be fixed by statute or was it a constitutional one? He declared it was the latter as the courts have in the past held that when groundwater could be shown as tributary to a surface stream the same laws applied. It is a question of proving that these waters are tributary and the reason no proper case has been presented. When not tributary they may be appropriated.

Question: "Would it be advisable to present a bill for a law fixing the status of groundwater?" He thought not because it would precipitate resistance and action by the holders of rights to surface waters. It might be held that the status of pumps which if allowed to remain stale before it ever came up. He realized the danger to capital invested in pumps from injunction and that an adverse supreme court decision or a proper case would be used as a basis for countless others.
Conference with T. J. Warren
Oct. 31, 1934

Regarding legal status of pumping

Courts hold percolating waters
tributary to stream flows unless
otherwise proven to the contrary and
hence cannot be appropriated to
adverse interest of other holding
rights.

Rights cannot be taken away by
legislation, therefore no legal status
can be given by legislative act
because it might interfere
with vested rights.

He wouldn't say whether a man
who has pumped for 30 years
acquire without interference has
acquired any right.

The College should not try to
intervene in any way in a first
case in order to institute a proper
case was being presented.

In short there is nothing that
can be done about it—must
await court decision.
Trip with Case and Stewart
Dec Nov 30 to Dec 2 1934, to
inspect erosion projects near
Cale. Springs & Cheyenne Wells.

Arrived Springs about 12:30 and
met C. Agent Spencer and Mr. Shelby
Young. The latter about 28 years old
seems to own a farm but is politically
inclined. He has worked on this
erosion project on Querned Creek
for some time and had in mind a larger project. Now it is
down to 50,000 acres and includes
about the area in T12S R63W &
or the headwaters of that creek. In
P.M. we four drove out over the area
skirting the upper reaches and passing
about a mile south of Eastville I
east to a point north of Peyton then
south to Peyton thenes east 5 mile
thenes south to Ellicoth thenes west
to Cale. Sprm. arriving about 5 P.M.

We observed many cases of recent
and erosion in small channels some
of them 10' deep. The western channels
appeared to be deeper than the major
east branch. About 6 mile south of
Peyton the east branch was wide
and the banks but a few feet high.
The grass was very short all over and
the ground was practically bare
in places. In the 50,000 acre area
would guess less than 25% broken
out. Otherwise very far apart. Wind
erosion not at all very evident. No
doubt present. New snow on ground
Water erosion should be checked by stopping and erosion and channels protected by preventing new side gullies. Doubt if it is advisable to do anything to main stream channels. Retention of detention reservoirs may prove to be part of program at least small stock ponds.

The main program will be the establishment of grass again which because of overgrazing and drought will not hold rainfall and run-off is rapid.

I understand the wind erosion is worse to the south.

Cultivated land may need tenancy or a practice of cotton farming and strip planting.

Wonders why the program should not extend to the streams west of Squirrel Creek?

US erosion plan has been on this ground and OKS project. Others in on it are Mr. Costigan, Rep. Molinie, Asst Sec. Int., Chapman.
Left Colo Springs 7/15 morning of Dec in Cheyenne Wells. Arr 11:30 A.M. Agent not in. Found D. Zook county surveyor who produced maps and seemed very well acquainted with conditions. Letters written to J. D. Marshall et al give his ideas on farming methods & control wind erosion and preserve moisture. After lunch went with him north from town 12 1/3 miles then east, jogging a bit south to a point north of Agapahoe thence south to Agapahoe thence north, thence more wind blowing back to C.W. by 3:30 P.M.

Hardly any water erosion noticed, channel bottoms in grass to within a few feet of water ways which are shallow. However Zook pointed out that the south branch of the Smoky Hill River at the point along the road north had moved clear from the south edge to the north edge of the cotton. The new ground is grass covered. Allegedly and evidence seen of wind erosion.

Problem is water conservation and proper farming methods.

After leaving C.W. we drove south from Kit Carson 5 miles and a mile east to look at the sandy area. Much evidence of wind erosion. The land north of C.W. is called hard land. Ran into Blizzard 10 miles E. of
Case and Stewart drove on next morning while I took train to Rubio. At requested by J. W. Goss to look over proposed site for establishing Spanish-American on relief on irrigated 140 tract

 Rubio

Dec. 3. At 8 A.M. went to court house found that Mr. Goss was in Fort Collins. Found county engineer H. C. Wetmore who went over plans with me.

There are approximately 270 acres in the project which is separated by the St. Charles River and situated to Sec 6 T21 S R63 W. The land on the east side about 70 A. is served by the Mexican ditch and reported to have a right to 2 acc. ft. from St. Charles River. The north edge of this land lies adjacent to the Dale to the Trail and seems to be all in cultivation. The 205 acres on the west side of the River is under two ownerships—Church 105 A. and Rudolph 100 A. These lands used to receive water thru the Blunt Ditch from a heading above the bridge but the flood of 1921 took out a lot of ditch and left perpendicular banks. They are now served by pumping with gasoline auto engine direct from river. Wetmore said that some contractor made an estimate of $7500 to rebuild the ditch. The heading would have to be at least 1/2 mile above the bridge maybe a mile and a flume would be necessary to get it thru the cut bank. The Church pump is on the Blunt Ditch and would be on a power line to the town site about 1/4 mile from below bridge.
The Rudolph plant is approx. 2000 feet farther down stream (6" Fairbanks Morse H.C. pump and auto engine, lift 15 feet.)

It would appear that pumping would be better than the construction of a new ditch for gravity supply. The Crouch plant is in a protected place, some high ground in the bottom ground with young willows separates it from the channel about 200, 000 feet away. The Rudolph plant is at a point exposed to the force of the current which condition exists for perhaps 2000 feet and some bank protection is planned and needed.

Should these two places be put under one ownership it may be advisable to use pump all the water at one (Crouch) place. However there are advantages in keeping both. Water demand may vary but not much. The main thing that makes it advisable to keep the lower pumps would be because of the fair quantity of seepage water that can be applied to the Crouch land. There would be some seepage from ditches in getting water from the Crouch pump to the Rudolph land.

The Rudolph land according to Wetmore, has a right to 2 see.-ft in the Bluff ditch and the Crouch land 1 5 see.-ft. Both dated 1869. In addition the Crouch land has filed on the seepage water which breaks out along the hillside in many places. 1/2 or 2 see.-ft or so claimed.
at present no serious attempt is being made to capture this spring water. Why? The remains of the Blunt Ditch is below the source of these springs and could easily be put in shape and with some intelligent work on the springs it looks as if the filed an amount could be collected. This amount of water would go far to cover the Crude Ditch.

The plans show 465 m.a. c. lots. There are 170 houses planned in a townsite laid out on a hillside which does not seem good to me as there is flat ground on top.

There is to be a pumping plant in the bottom (Arkansas River underflow) and an 1810 pipe line to a 1000 gal. tank on highest point. No water planned inside of houses.

Adobe houses to be built and with the 1-acre tract at $800 payable over a 20-year period int. 3%. In addition to this will be a $200 charge for administration no interest (total $1,000 $75,000 asked from F.E.R.A.

Total cost of land $110 per acre for irrigated portion. $10 for land $100 for water.

Town water supply from a spring instead of well? Waterpipe line.
May 2 1935

E. J. Poliatti

Gene Manno 1/4 me No. 1

Wine Canal. New 16” casing 45’ deep contains 6’ 2” of water

when drilled Nov 1934. Burned Feb 1 1935. When depth to water was 8’ 11” from top casing which is 1’ 2” above G.S. 170 g.p.m.

3’ of shale. From Nov. 1 to Feb water came up 6 inches. In 1930

April well near by 24” to water (Fabrigo). On March 21 1931

depth to water in well 500 yards distant 31’ 2” to water. (Mike Manno)

Well for Mr. J. Caro. April 3 1935 16” well 36’ 2” to shale 28’ to water

3’ 9’ g.p.m to start with. This well

is close to Fabrigo’s well where

on April 1930 depth to water was 24’

Blend

Dave Thomas 1st stone house

E. A. Blend school s side road

16” well

0-12 sand

12-18 dry sand

18-19 cement gravel

19-20 clay sand

20-21 cement rock

21-25 rock + gravel

23-29 water gravel

23 1/2” to water

Albert Monroe 1/8 mile s of Thomas

8-23 pit

March 1935
23-24 clay + sand
24-25 compact
25-27 clay + fine sand
26-28 - sand + gravel
18-35 silt shale
26' to water

County Farm - 350 yards 90' of Monica
Feb. 12 1930 31' to water
42' to shale

Carl Bauer -

Very few sugar beets planted because of water shortage

Water Report

Ark. River Juata
" " Qualla
" " Fucro
Oxford inlet
Spiture
Kramer
Halle

May 1934 118
412 110
326 103
48 40
7 3
10 5

J. S. Johnson - Rocky Ford

Thinks that lack of water is not the only reason for not planting sugar beets but that the phase has much to do with it. City has not set containing sprinkling cost of city water limits if automatically. As many as 50 individual small sprinkler plants in city for sprinkling the 8-15' wells and 75 C. parts set at ground surface.
Water table has just gone down very in筑牢 even.
Several new farm plants connected this year, small same on house water.

O. H. Casey
Water situation very bad.
One of his worst troubles is in
estimating transmission losses as these are great now. Hopes for
a big flood to make up these
difficiencies so that he can get
back on to old schedule.
He hopes that new water will
be developed above. Favors that
instead of Cadysa,
Thinks good water has gone
down a foot or two
and measurement
is very poor that pumps affect
river, but it would be hard to prove
Does not think that acreage
is being called for because of
apparent water shortage. All
hope timely rains will come.

W. S. Bickford
Thinks water levels along
two feet below normal.

J. Lyons - farmer one mile north
of (old record of Roman pump) says
that since 1929 water table had
gone down 11 feet. Knows this
because of irrigation will get
in that year and displaced land
year with Pomona outfit. Thanks. Water table 2 or 3 feet lower than last year. Says many are not planting - waiting for rain. Very few oligee beets.

Lamar -

Mr. Leatheman says that since 1930 the water table has gone down 15 to 20 feet around Chester which is on 2 1/2 gland bench. This lowering takes the water table down to a shale formation (21) and to get water wells must be drilled 100' deep. Light change along with but many depth tiles have about ceased flowing.

E. S. Harkness  Lamar Rt 2

6 - 15" wells from 16 to 20' deep 1894. Using 8" 7" + 6" pipe 70 ft. ctypes. Pump 6" Worthington CLBS 18" suction.

Wells in gravel and go to shale.

Sec 6 23-47

Started out to sink 24" 16 ga. casing but it went out of ground at 24 feet. 18" placed inside to finish 6 shaly at 29 ft. Good gravel all the way from water surface at 4'.

#5 Colorado pump

Handed megs with 18" Cap weir in large ditch gave a little more 5' depth = 1.4 sec. 6:30 p.m.

Drawdown said to be about 16 feet.

H. A. Holt of Walsh has well 1/2 mi. east of Blains 10" 500' feet deep with 300' 10" casing. Water stands at 18'. Put on 7 1/2 stage Turbos 10" 52' cal. 20' section. Days pumped 730 g.p.m. (cut) with 4 feet of draw down.

Wants more water. Got 5' x 10' V.F. pump (old) from Pueblos where it was used to pick bridge piers. Believe he should not depend 1200 g.p.m. with V.C. pump.
S. C. Bunting

85 hp Cummins Diesel @ 1,200 rpm
640 Glenora
Cherry 1276

68-24 hr day in 1935
fuel: 93.2 7 3/4 gal.
Did Shell - Diesel oil at Regina
2.54 Changed every 100 hrs
5 gal. to fill
April 750 rpm
530 rpm. Boilout 15' diameter
let in 33' of ground
24' well 96' deep

Camps: 14". 94' Long
Reported no trouble but well say they did. Bad
corrosion water layer at start - no oil
Engine checked

Doyt

63 hp 4 cyl. Cat. Had trouble
same as Alden last year with
ring sticking Rings changed
Barnesfield (Wichita) fuel
dissolved. Mona Motor oil 30
No. 1 Diesel fuel 32-36° B 181-44.5
118° F
99.5° trust Oct 16, 1935

Broke 2 values in 1935

There were 37 wells used in 1935
but one very little (E.A.)
Lee Alden
1935 data on H.T. Diesel
Engine 444
Used 066/44 gal fuel cost $35.21
Plus 17% state tax, About 500 gal
Left in tank 735 gal defending
2438 hours to Oct
15 in Oct
2453
Sub-oil 210 gal oil 25 gal left
210 gal cost 158.74
Superior fuel 65 gal dairy
Denver made S.A.E. 30 gal about
Mona Motor not satisfactory
Repair 7.50 for grinding values
7.00 for pump packing on engine
Fuel cost includes 15 gal gasoline
of 150
8 Caterpillars in this district

Wrote to pay water condition
W. A. Carlson
Route 3 Greeley
Trouble with pyrometer on carburetor. Pressure dropped caused motor to stop working. Prevented proper lubrication. Three crank shafts furnished by company. One badly scored by others. New pistons, rings, and lifters.

Engine started mid-season 1934. Ran all the time. That is, did not quit. But was noisy once. Evidently pressure should stay up to give proper lift.
6.1 hp Cat
1.81M x 23.8 HP = 17.9 M x 36.4
36.8 x 18 x 10
X and Y Replaces 25 cubic yards

5 cubes 12" x 12" x 12"

2 cubes 12" x 12" x 18"

1.5 cubic yards

2.5 cubic yards

Tuck 3" cement

2.5 cubic yards

2.5 cubic yards

12 cubic yards
G. Metzger - Las Animas

48" steel casing 8 ft. 9" long, racked above.

Depth 26'-19' to water, coarse gravel. 60'.
Well is on blue clay, 7 thick to rock.
3 1/2" V.C. pump. 160 gpm est.

On Rule A, when muddy, A comes in
Drainage. Used test holes about 1 mile
below the R.R.
\[
\frac{.8 \times 50}{65} = \frac{4.55}{.65} = 7
\]
\[
\frac{3.14}{5} = \frac{16}{15.70}
\]

\[3.14 \div 15 = \frac{24}{440}\]

\[\text{cost of wood stock}\]

\[S - M - S - E - S\]

\[\frac{11/2 \times .85}{9.77} = 13.1\] hyp

\[\frac{.44 \times 85}{8.8} = 10.7\] hp

\[\frac{7.0}{10} = 4.92\]

\[10 \times 3400 \times 10 = 10 \times 7000\]

\[H = 10\]

\[10 \times 7000 = 70,000\]
McClain - Oatkin 160 A - good water
Estil McClain - Celina
W.A. Oatkin
Gibson 1/2 east + 1 mi north
Peterson
Wells 3 1/2 S + 1/2 east

\[ \sqrt{8} - 8 \]

\[ \frac{133}{7} \]

\[ \frac{2000}{204} \]
Seanan Kegy - 16" well 116' deep
12 ga  3/8" reifs. Water at 46'
M. S. White
Pump Pomona - capacity 1380 gpm
at 58' head - 25 hp motor
Well: 12' top soil, sand - then
gravel bal. of depth - start in gravel.
NW Sec 1 3N 58W

J. A. M. Crouch - 16" to 120" then
11" to 170" 20" overlap. 12 ga casing
3/8" perf. This is 4¼ hole at this
location - others failed to get depth. B.A.
Holden 2 and Goodrich 2. - Water at
56' - Capacity 1665 gpm at 66

Pump to be Pomona 1600 gpm at 66'
12" col. 1½" shaft 16" bowl, enameled
polished bronze impeller. 819, field
30 hp motor G.E 1160
NW Sec 10 3N 58W
J.P. Curry (John Bower place)
Drilled M.J. White 16" 12 ga. 1/4" perf.
depth 115' (3 wells tried here)
Water at 47'
1200 g.p.m. 68' lift
30 hp. G.E. motor
SW 1/4 Sec 12

Oliver De Long - Drilled by White
16" 12 ga. 1/4" perf. 150' deep.
47' to water
1100 g.p.m. at 61' lift.
16" to 125'. 12" to 150'
gravel starts at 136. 1 to 150'
balance non water bearing
Pomona pump 25 G.E. motor
N E 1/4 Sec 14 3N 58 W
L.C. Soft, unfinished test hole
57-70 dirty silt
70-79 hard clay
79-93 quick sand
93-108 clay
108-112 dirty sand
112-115 clean sand
115-119 hard clay
119-121 soft sandstone
121-128 clean gravel
128-152 good gravel

Alix S. Stork NW 1/4 3 N 58 W
16" casing 129a BAHolden
55' to water Well crooked
52-70 sand + gravel
70-71 clay
71-104 sand + gravel
104-145 good gravel

Worthington turbine 10" col. 74' long
1350 gpm est. Installed with
thrust bring upside down
John Deere tractor engine. Used
Thermoline @ $4 OK. Copper coil cooler
20' long 1 1/2D total cost incl. pump $18
24" wall - 12 ga. 156' deep
53' to water
0 - 15 - soil
15 - 35 - sand
35 - 48 - clay + sand
48 - 70 - coarse sand
70 - 92 - clay
92 - 127 - fine to coarse sand
127 - 130 - clay
130 - 148 - cemented gravel
148 - 155 - good gravel, walls stood up
155 -

tested at about 1000-1100 gpm at
20' draw down

In about 1908 water stood at 80'

nearby? Another man said 60'

used 72 yds of gravel

290 a. covered in 1937 which was too
much for pump.
B.D. Archer, NE "Sec. 4 3N 60W
16" 12 ga. ½" perfs
water level 56
0-7 soil
56-60 sand
60-61 clay
61-67 sand
67-68 clay
68-75 dirty sand
75-77 clay
78-94 dirty sand water
94-104 quick sand
104-105 clay
105-115 dirty sand water
110-112 clean sand + gravel
122-123 clay
123-129 clean sand + small gravel
129-137 clay hard
137-139 gravel
139-140 clay
140-150 clean gravel
150 blue shale

Nell was developed 15' of sand
then tested 18 gpm/ft/deg. then
developed again 50' of sand

In 1910 ½ mi $ a well was dug and drilled
150' deep 60' to water - good well
Roth Boer

4'23-36

16" to 107  10" to 125  14'90 1/2" per 6

48' to water

48 - 60  blue clay

60 - 80  sand + gravel

80 - 81  yellow clay

81 - 85  dirty, sand, some water

85 - 89  yellow clay

89 - 91  quick sand

91 - 92  hard sand

92 - 97  dirty sand

97 - 98  yellow clay

98 - 101  gravel

101 - 104  gravel + sand

104 - 107  yellow clay

107 - 114  sand

114 - 115  yellow clay

115 - 119  gravel + sand

119 - 120  yellow clay

120 - 124  heavy gravel

124 - 125  blue shale

800 gpm at 90°
Oscar Boer

16" 14ga casing 3/8" perfs

48' to water
48 - 55 sand
55 - 57 clay
57 - 64 clean sand
64 - 67 clay
67 - 65 sand
65 - 67 clay
67 - 69 gravel
69 - 75 clay
75 - 79 gravel
79 - 80 clay
80 - 90 gravel
90 - 107 dirty sand
107 - 108 1/2 gravel
108 1/2 - 110 clay
110 - 113 gravel
113 - 114 blue shale

400 gpm at 87' lift.

SA. Laswell - 138' to shale no good
38' to water

Sam Clem - on SE edge of Wiggins
60' to water 148' deep mostly mud
no good
F.A. Trinkle
SE 1/4 Sec 9 T 11 N 20 W
24" 10 ga well 151' deep
35.8' to water, stop casing at plus 1.5
0 - 23 clay
23 - 58 sand
58 - 59 clay
59 - 72 coarse gravel
74 sand clay band
112 hard clay
131 coarse sand
138 fine
154 gravel
No pump - On test 1250 gpm at 90'

B.A. Holden - 24" 120' deep
1000 g.p.m. with 12' d.d. meas.
14' 10" to water
Pump Worthington 10 in. dish

Cummins 85 hp Diesel pump
48 - 60 good gravel
68 - 72 gravel
78 - 98 gravel gravel
88 - 100 gravel
100 - 114 gravel
114 - 115 gravel
115 - 120 good gravel
H. Bigler 16" well 104' deep
Johnston turbine, McCormick Deering 60 hp Diesel - This is 3rd season - no trouble
uses Mr M refinery furnace fuel oil delivered
Started up just as I came 1 min. on gas.
708-800 g pm from 90'

C.A. Larsen - 2e Holden NE 4 Sec 29
3 N 60 W
24" 109a. 108' deep, 42' to water
Byron-Jackson turbine est. 1100 g pm
about 70' left.
Commins Diesel 55-hp
Harry James  SE "18 3 N 60 W
24" well 125 gph 88' deep
Water level 40'
1200 gpm est 20' dd
B J turbine

Sadie Knox - Kurenbay  SW "18 2 N 60 W
24" casing 125 gph casing 78' deep
19.1' to water from top of casing at plus 1.2'

Western Pump  # 14
Harry James  Sec. 2  2N  41 W
Southwell   - 24" well  12 ga. hardness
0 - 3 - 501
3 - 24 - sand & fines water
24 - 34 - fine sand
34 - 56 - fine gravel
56 - 82 - clay
82 - 60 - sand & clay
60 - 72 - coarse sand
72 - 75 - shale
Washington 16" 2-stage
est. 1400 gpm 25' drawdown?
used over 50 yds gravel

Carlson

0 - 7
9 - 30 - clay
30 - 50 - sand
50 - 80 - clay
80 - 80 - sand coarse
80 - 119 - clay
for cost data
Depth to water thru discharge pipe
32.4 - 2.0 = 30.4
Drawdown gage pressure 39 1/2"

Lubricating oil on hand
25 gal. engine oil
15 gal. bearing oil
Fuel oil
100 gal on hand Mar 16
520 gal delivered 3-17-36
Fuel on hand Apr 14 420 gal
Adolph Moser - for Cost data
18" well 112' deep

Pump FM 70' col. 16' suction 2 stages
Eng. E.M. 40hp Diesel
Tested 1370 gpm with 22' drawdown

Last year - 1370 hrs operation - 1st year -
267 worth of fuel 75¢/gal.
68 gal lubricant 39.00
12 lbs. grand head grease @ 75¢
Fuel on hand 107 gal. @ 7 1/2¢
Lub. oil 30 gal 65¢
12 lbs. grand head grease

Dearborn Chemical soln # 134 used to take out scale cost 50c $1.85
F.M. can furnish.

41.8' to water
46.0 at 2:30 June 30
C.V. Maddux for cost data

310 gal fuel on hand from Consumers at Roggan
44.0' towater from top pump base
5 gal lub oil on hand (may not use)
2 gal pump oil on hand

M.E. Dunham, Keenesburg
Nov. 11, 1936

Fuel tank is 3.43 inches in diameter and 8.31 feet long.

Depth of fuel: 1.7 at one end and 1.5 at the other.

Lub oil 1 gal.

Well 498' to water.
City of Ft. Morgan

1935  426,460 kw used for irrigation, some little feed grinding

1936  20 plant

839,231 kw used for irrigation only.
Fuel oil left in tank 22"
Tank is 4.0' in dia. and 6.0' long
Depth to water 4.7.0
Repairs
Rings 6
2 injectors $8
Gen. brushes .92
" repairs $1.70
Zimbleman Bros

Nov 12

Fuel oil left - 222 gal

Lub oil 1.48

1661 - 3/4 dia 2.3' long looks 2or 3gal from full

30gal

1661 1.2E dia 1.9' long has

0.8 depth vert init.

Depth to water in well 32.5

4000

Pump - 1600

Well 108 @ 9.4 =

Eng 1200 2 = had

belt 155 -

3 belt 84
Fuel on hand beginnings 420 gal
left 490
Boat 76.25 gal @ 89

Sub. oil - Boat 3.18 gal @ 604
plus 5 half dr. @ 1.30 plus 27.10 tax

Pump oil 5.10

Gasoline 5.10 179

Repairs Pump 18.25
Engine conditioning 33.38
Electrical links 6.62
3 sets new rings, pistons 89.78

Jan 11

Apr 157.5
May 251.5
June 163
July 683.75
Aug 679
Sept 538

1989 hrs

62.7 to water
Fuel left 890 gal.
Lub. oil .65 left in 54 gal drum which is .165' long = 13 gal.

Fuel on hand beginning 310
Purchased 6215
6,525
Fuel left 890
Fuel consumed 5635

Lub. oil on hand beginning 7
Purchased 220
227
Left 13
Used 214

Dec. 15, 1930

06:07
Briggadale North
15:73
East, crossed Cr about 1 mi
17:00
1st ranch - flat land 1/2 mi return
18:8 = 15:3 North again
19:2
Creek
19:9
Section line, house on W
20:6
house 1/2 W - 2 1/2 mi E
21:8
Abandoned gas station - house dug well 15 x 20’ 6” water
21:8
House - some cattle
22:2
Cistern - running water, 200 yds. in
23:1
Dug line, house - E & W occupied
24:2
House - poor, irrigated spring
15:3
Oasis north W - house E
26:1
House E
26:4
Turn E - house W
26:5
House - vacant?
27:2
House - very small
27:8
Good house W
27:9
House S
28.8 house S.
29.5 house S. Flat land, close to water - perfect alkali
31.0 Bridge, flat land again
31.7 Turn N.
32.6 good house, turn east
33.6 grower

Guy Smith - Sec. of survey for proposed electrical dist. - a cooperative. Signed up, 358 total in Wyo. & Colo. Grow 55 engines
Biggrod 39, Cornish 5, Carpenter 22, Newf 23, Albin 53

About 100 not signed yet.
Power possible from Guernsey dam at closest point to Grange Wyo.
First power pickup at Bannum 10 miles south, 50 miles south to Guernsey.

About 1/3 in Beta area Colo. 28 or W of Durango in 65 W
E.L. Dorsey NE 4/14
12" AC pump BJ 19 wells

W.H. Thompson SE 4/32
3 wells in Brule clay 7' to water 15'dep
150 gpm, 1/2" pipe, trench now to increase cap.

G.T. Townsley 10' sq. timber 85' deep in
gravel, 8' to water. In gravel.
150 gpm. 6hp engine NE 4/32

C.C. Church Conc. block 14'dia
16' deep 7' to water Nos V.C.
American Irr. 27 4 in 1911
N.E. 27 11-62

AW Bowden NE 29 11-62
Well 905' originally, but after
dynamiting 92', about 55' better.

Al Little - ami E of Hereford
150' thru magnesia to good flow
Water rose to 50'
Bowlby 8 1/4 W 3 1/2 mi N.
of Newfound on Potea. Co. 24" well
14' thin sand gravel, fine sand
at 18'. Used no pressure on top
Casing due to n progress.
Dec 16

C.W. Luce - SE 1/4 11-60
Drilled well, 74' deep, 8' sand and rock. Then Brule clay where seams of gravel occur. Water stands at 25'.

MC Foster - driller
NW 1/4 11-60 dug well
0-6 - soil
6-60 - magnesia
60-65 - loose gravel (fine)
Water stood at 57' - dry now caved
E.ctr Sec 5 - 11-60
Drilled well - foot of bluffs
hard clay to 87
between 87-100 2' loose sand
100 - redish clay and blue clay strata
Water in cavern gravel - stands at 3/4
T.J. Joyce
48' to 60
24' to 120

Conc. 0-10 - no no other casing
0-1 soil
1-140 hard pan Brule clay
most water 80-105

Irr. 50 A 1936

Water stands 6-30 draws down to bottom - 7:00 pm est

Western Pump 7 stage 6" casing
Sec 20 - 19-60 Wyo.

H.T. Linglebaugh
3m 5d 3

12' dia. Conc. black well 25-27' deep
In gravel 15' to water. Drift run north
Dempster engine, V.C. pump Ran some 1935
25 yrs old - 30 Acres

Also another well [Thin dian] 'n E
From Hereford - C. L. Ritzma with us today
J. W. Pyle Asst. Director Rural electrification, Wash. D.C.

D. C. Crowl on Porter Cr. Sec 20 NW¼ 12-63. Dug well 25' deep 19' to water. Soil 11' Brule clay 13 or 14'.

Paul Mays on Simpson Cr. Artesian well flows 19 gpm? 78' top soil 10' of gravel 180' of Brule clay Cap rock below clay thickness? then struck artesian flow
Talk with Geo C. Cox

Ft. 1904 to 1928 water raised 12 ft. in these wells at City Hall.
Annual cycle begins in Feb. Largest
Gain 1924-1928. Since 1928 water
has fluctuated lowest 1925. 34
Wells now on their lines. Winter load
about 1200 Kf. Summer 1903-15 W.

North of Ft. Morgan and above
ditches some seep ponds have gone dry
in last 5 years and certain swamp
land just below ditch is no longer
endangered. This happened before
there were any pumps south.
Jan. 11, 1938

Left H. Collins in a snow storm with Floyd Brown headed for Kit Carson Co. to consult on pumping. Dr. about 1:20 P.M. Snow on pavement as far as Denver. Sat down again from Cozy Corner into Denver. Stopped in Denver to talk with Carter at State Planning Com. office about ground water survey in Kit Carson Co. Drove on to Byers for supper then to Denver for night.

Jan. 12

Brown had made an appointment with county agent R. D. Woolfin at Flagler for 1:15 P.M. Arr. Flagler about 1:00 P.M. ased around Pecos Cafe until 2 P.M. when Woodfin and Mitchell (S. C. S. at Cheyenne Wells) showed up.

Our first call was on a cattlemen by name of J. A. Overhorst
who lives 2 miles S.E. of Flagler. 

He has a dam on a branch of the Republican about 12 ft high (built under supervision of State engineer office and filed water right). Looks like it would hold about 8 feet of water covering 4 or 5 acres. Good earth spillway with concrete protection walls at end of dam. 10” outlet goes in well in pipe line. Irrigated about 250. I probably first used 1908. He located here about 1894. He always had water and crop until last year, alfalfa. Ploughed up last fall. Dam was washed out in 1935 and rebuilt higher. Two other stock water reservoirs near by. 

Choke is practically at surface. Reservoirs have increased amount of subterranean below dam.

V. thinks that in order to make a living a cattleman needs 2,500 acres as a minimum. He has perhaps 3,000, from 20 to 50 acres ph need.
Drove on to Vona and at about 1 mi S and 1 1/2 mi E saw a dug well perhaps 30' to water in a draw. Old large pump head for single acting cylinder pump 3" discharge pipe. Perhaps 1 acre of ground irrigated.

Drove to Bethune where Woodfin wanted me to talk to J.J. Delaney. Is an old man 68 who made a lot of money in real estate in war times old is flat broke now. Lives in a fine large house built when he had money. Has a letter writing habit and an idea that all the country needs is some irrigation wells. Wants that Federal aid be given farmers to put down & equip wells to irrigate part of farms say 400. Did not know economic limit of lift. Most of lands would be "out" on this score. Told him that I
thought Fed. aid on such matters was a broad social problem.

To Burlington for supper.

Back to Stratton where a meeting of farmers was called. About 53 present at start - 35 at end.

I was asked to discuss pumping problems. I had not been informed about this until today. Back to Limon for night.

Jan 13 Drove to Limon again.

Met Ben Ferguson, county agent for farmers, Harold Alfond, also G. H. Ford, F. S. A.

Drove in 2 cars east to W. H. Wells Ranch [Office Colo. Springs] on Big Sandy

where pumping plant 1 yr old is located 5 miles east of Mullet on south side of River. About 60 acres possible of in between R. R. and river. Jim Stabler seemed to be in charge. 2 - 20” wells 5’ and 45’
deep plant 30' apart. Sycamore
grand at 9 to 15'. Boulder at 45'.
On shale. With stands at 9'
East 500-9 gpm with draw-down
18-19 feet. Denver pump.
Back to dinner for lunch (8 dfw)
Drive to place of E S Thistlewood
ins. Pumping plant in NW corner
see L T 75 R 57 W. 14' casing
40' deep. 7' to water. Rotary pump
in pit (old) 8P Dampier engine.
Started pump - 250-300 gpm out
with 11' draw-down. 0-15' sand
15-40' fine gravel - on shale.
Drove to Leggate three south mile
then west 6 mile three with a mile
on 30 land on East Bejou
where homemade pumping plant
was supposed to be last man had
just left. Co
Continued mostly south to farm
of McCatchen who had an agency
hole down 43 feet into blue clay and 9' of water. He believed that there would be 40 ft of gravel below this as indicated in lower well 30 yds south. This place was about 5 miles north of Limba (garden) and not on creek bottom.

Almost dark when we reached Haiges (ante) place 20 - 3 miles S.E. of Limba where water was making into narrow drainage channel and 2 dams had been built. Need to rest, total flow - perhaps 20000 p.m. 32 acres on one side and 2 acres on other susceptible of m. Might install pump and pipe water to high point on west side. Requires more closer examination & surveys to locate plant and plan best development of water supply.

Drive to Colo. Springs
Jan 14

Left about 9:45 with C. Agent
Victors, H. Denton & Paul
going east. Stop at Geo,
Buchanings. He is still
putting down wells in the creek
using oil tenders.

North several miles to see
a small flowing well which
had been recently equipped
with a small cyl. pump.

Drive east to Frank Mihalyk
who had dug a number of test
holes and finally got Gabati
to drill a 2½' hole 28' deep
which yielded 125 gpm (updated).
There is a hard formation about
18' down which holds up a layer
of water table at about 12'.

12-40 - hard dry grumby clay
40-68 - fine gravel
68 - blue shelly

Water at 40' 7' NW 35 10-63
Equipped with new Peerless turbine and geared head.

Job testing is expected in a few days to start another hole about 100' east. Recommended drilling test holes, also to use surge block on first well.

If no well can be at new site, a third site is contemplated nearly 1/2 mi east.

Noticed that Jobbetti was using a "starter" length - 1st section 10' ga, 3 sections 12' ga, then a section of 14' ga to connect with remainder.

L.V. Guzen NE4 Sec 20 14-62
24' well 68' deep, about 80' to water.
Good gravel but only 18' of perforated casing with 4' backfill. Just a mistake not knowing depth in advance.
Water pumps thru well holes high up (impermeable casing.) Colorado pump and earth reservoir.
Jan 14. J.C. Needles N.E. Sec 29

14-62. Deep and Needles were just starting into water and sand with 8" wetlin' sand bucket and home made well rig, 24" Dempster casing, 36' to water.

C.I. Anderson - 24" well 36' deep about 5' to water. Small Denver pump. N.E. Sec 1 13-63.

E.F. Zanger, Sec 29. 13-64.

Cattleman but no cattle now. Owned thousand acres. Has been aided in building a number of small dams by S.C.S. Diverts Sugarmill Cr. and now plans to capture underflow which is at surface. Deep drain line trench already made. Diverts from one reservoir to another and under last one has about 35 A. under irrigation. Pumps water from wells in two places 15' deep water almost at surface, small discharges. 40 A (approx) total in. Feed 100-150 mallard ducks.
Jan 15 - with Mr. Loving
L.F. Olderstadt 1937
NW 16 16-65
24' well 60' deep 37' to water
0-10 - soil & clay
100-200 - coarse gravel
3/12 gpm drawn from 10'?
Gaballa duties - Reissless pump
Auto engine

John Wilson NE 17 16-65
24' well 57' deep
700 g.p.m.
Reissless pump

At noon talked to Farmers' Luncheon Club, Colo. Springs and left at about 2:45 for home. Arr. about 6:15
H. Forr - Lebsack Farm
For future reference  May 2, 1938
# 3 - 13.33

?  For water levels

SE 42 60° 64 W 2 mi  at H Wells 1930
May 2, 1938
48" well  3 52' BM  top 48" casing at -6.2
W 24' 10' 11' BM  casing at +0.4

F.A. Plumb
SE, SE Sec 13 T 5 N 64 W
15" well in timber pit  44' deep
BM  top  plank cover at +0.4'

1938 May 2 1857
Wiggins Area

May 11, 1938

There are several Hardman brothers one being a driller who made a rotary rig last winter to re-drill a well on M. D. Hardman's place in SW 1/4 Sec 3 + 3-60. Bucket stuck in first well but he pumped it anyway. New well is 195 feet deep completed May 10 and meas. to water (60\% from 65\%) may not be exact because of mixing process. Sand and some good looking gravel down 6" boulders. H (the driller) seemed intelligent enough but said he wanted to know when I stood before he tell me much about underground conditions that he knew about. Spent quite a little time trying to convince him that I was as his old. Ready to drill another well in NE 1/4 of 3. Hardesty casing used.

In 1908 one of the Hardman bros. said it was 80' to water in Sec. 3. In 1910 the balance of the Gallow Acme put down on well - good flow but VC pump improperly installed settled & dried. In 1936 - man (O'Batcher) told me in 1910 and well was 150' deep & 80' to water - good well.
R.W. Clark May 14 1930
13/46 top cons. blocks W. side at GS.

Nate Warren NW 4 Sec 28 9 N 46 W

24.50 24.65 bottom pump base 11/3' above GS.
Had pumped within 24 hrs (2 p.m. to 10 a.m.)

2 m. N 47 W dug well 59.45' to water
3/4' of water to shale.
Dec. 9 1938

Clyde Barkley
5 W cor. Dec. 20 3/57
2400 with ditch.
16" well 105' - 50' perf.
12' to water
72" to water when pumping about
1300 g.p.m. All sand
Washington Pump. 30 hp motor

Sargent — Dec. 9 1938

Measurement of Dec. 9 was made
than pumps col. Could not see location of
casing and weight hit mud at about 39'.
Several typs made before water mark
obtained. No doubt abt meas. Very strange
asked Supt. Cox re. H Morgan water
table which he says is a little higher than
a year ago. Barkley (above) could
not help. Did not see Supt. Absence
of men making meas. Forgot treatin
Well #5

18" rectangular weir 12 3/4'

Depth to water from top of casing:

8:00 AM start + (21' 5") = 21.0
9:55 - Well 31.23 Weir 3 1/4"
2:26 - Well 32.8 V Weir 277

Change speed at 2:20

4:36 - Well 35.6 Weir 3 3/4 + 0.01

See memo to Miss Irma MacDaniel under "reports" in my desk. Tested for Miss MacD. to check Gobaiti's measurements. Welton ditch covers ranch (1000+ acres) but recent court decision re. water makes wells necessary.

18' weir .8 x 2.5
Weir gage correction + 0.03

Cloth tape error - Edesons tape

Steel - 2.0
Cloth 20' - 4 1/4" = 20.4
BX Ranch

Jan 4 1939

Well #7
18" rect. weir

Depth to water top casing at +1.0
8:30 Start
(3 10"") = 13.7 (Edeson)

11:55:4 31 2+7 = 31.9  Weir 3 5/8

4:50  Well 351  Weir .282

18" Weir 7 x 3.0  +.018

Weir gage correction +.018
BX Ranch

Well # 8

24" rect. weir.

Depth to water, top casing at +0.5'

10:00 AM Start (13'5") 13.3

1.35 Well 23.7 2' weir 0.23 ½

Change speed 1:40 PM

5:10 Well 27.1 Well 22 ½

Weir approach .6 × 2.5

il & K
Soil Conservation Service


At request of Shelby Young SCS Water Facilities Conservationist Floyd Brown and I went down to Ca. Springs to confer on this program. Arrived just before noon 3-7-39.

In P.M. Brown + I in Bi-s car and Geo. Welsh and Young in SCS car drove east on famous highway then south to Moins. Lots of mud. Perry's rotary test rig was putting down 3rd hole in Moins place and had hit shale at 36½ ft. with 10½ feet of gravel above it. Water at 15 feet. Advised them to quit but Moins had idea of gravel below shale and wanted to go to 200 feet. Met Wilbur Packard here who has charge of test hole drilling for S.C.S. Dulles to Pearson.
Drove to Denver for the night.

At supper met Warren Sr. and Henry Perry.

3-8-39

Young asked Brown to drive his car today. Drove west about 10 miles then south through Kutch Baker Bros. 70’ to water. Ground not thought to be deep. Not on creek bottom. Men are 60 years old. 60-100 a.

Webber several miles east of Baker. 43’ to water, not on creek bottom. 80 a.


Back to Morris when driller had reached only 90 feet still in shale.

Order to quit and get to cattlemen.

Return to Denver for supper. Met Warren Sr. and Henry Perry. Drove back to Colorado. All east and west roads very muddy.
3-9-39

Met W.R. Watson, Regional water facilities administrator about 9:15. Young, A. Agent. Victims, W. Biscoe Co. supervisor. F.S.A. Brown and I drove east on Farm Road to about east boundary El Paso Co.

Young man by name of Rabbit had dug couple of wells. Water in sandstone at about 60 feet. Recommended not more than 5-10 garden, plunger pump. Wind mill on small engine. He now has 1/2 acre garden under rabbit fence. Not on cotton.

Rode to Simla and back to Col. Springs. Ex. 3:30 P.M. Home about 6:45.
Apr. 22 1940

New well being drilled on road S.E. from AB's MS Clare off. Also n Hutchinson's place (old well). 4 miles east of Geo. Simpson.

Test hole for farm n Lebsock's place in deep channel reported good. Will abandon east well on co. (Talk with C.R. re. air col. relief.)

Grayum building rotary rig for Wheatland job.
H. Morgan R.E.A.

1939

Apr 530
May 109900
June 202500
July 272300
Aug 310800
Sept 226800
Oct 54700
Nov 9300
Dec 900
Prospect
Wheeler replacement
24" 54" rotary 115' deep
test 825 gpm at 90' lift in 1939

New well 1/4 mi E of 1/2 mi No.
24" 102' deep
test 1000 gpm 65' lift

Carlson - 24" between other 2 90' deep

Carlson new well N 1/2 mi north 24"
95' deep tested 1400 gpm 64' deep

1/2 mi north 1938 - 24" 80' deep
Oct 1939 test 744 gpm 70'
Apr 1940 1000 gpm 65

3/4 mi north 24" 95' deep
Oct 1939 test 825 gpm 86'
Apr 25 1940

Marvin Cast
20" casing 115' deep
Test at 825 gpm Nov 1, 1939

West well 105' deep 24" casing
Drilled by Tholemen
1000 gpm at 75'

Wells level in Bigon transferred
Breshears SE 63 2-60
4487 from opening in pump base
2 above GS

R.A. Baker SE 26 2-60
Top casing at GS.
50.35

M.R. Brown SW 17 1-60
Top casing 7 ft. above pipe
23.3
Re: irrigation of lawns etc around newly built units north of old plant.

Mr. Dowling, arbitrarily submits water consumption of north units as follows:

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<tr>
<th>Month</th>
<th>Gals.</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Sept 1939</td>
<td>6227.549</td>
<td>535.65</td>
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<td>4863.305</td>
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<tr>
<td>Nov</td>
<td>2654.769</td>
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<td>484.62</td>
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<td>546.82</td>
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<tr>
<td>Aug</td>
<td>9878.370</td>
<td>532.40</td>
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<tr>
<td>Totals</td>
<td>63464.268</td>
<td>3819.86</td>
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</tbody>
</table>
Estimated that building took 20 19.5% of total

Total 38 19.5
Bldgs 20 19.5
Erigitation 18 00

New Extension if north unit is a little less than above but is estimated as same

Dirt of 17 6 at 1st at new development is est. at 49 000
Total for present new development 45 00

There is also the chicken ranch behind (north) which takes about 9 50 worth and about 20 acres of possible building sites lie north
Ft. Morgan Nov. 7, 1940

With P. E. Kennedy of the Colo. Water Cons. Board installed a Bristol water stage recorder belonging to the Board in old well under City Hall. First tried the west well but found it blocked below the water surface about 18”.

The east well is in a large (15’) brick pit about 35’ deep and 12” in diameter. The top is covered with loose planks. In order to secure the planks from moving as a foundation for the instruments 2 were bolted to the bricks at one end and nailed to a cross timber near the middle. This appeared to be stable and the frame work to hold the instrument was attached to these 2 planks.

The reference point is the top of the plank at the chain
hole and the pen was set to correspond to the measured distance to water of 42.71 feet. The
direction is such that as the distance to water becomes less the scale distance is less. On looking at
the chart the actual conditions will be reversed that is as the water rises in the well, the pen will
approach the smaller numbers. (Scale runs from 1 to 5)

Mr. W. H. Herold will care for the instrument and send charts to me. After a year or so
promised to send charts to W.C.B. for storage.

The floor of the basement is nearly 5' below ground level.
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<th>Dist</th>
<th>Depth</th>
<th>Revs</th>
<th>Secs</th>
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<td>26</td>
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<td>1/3 of 25</td>
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Meter # 15188
Staff gage Start 0.33½ and 0.33½
Godfrey ditch spilling 49.5 ft

Meter # 15188 V = 2.171 R + 0.037
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\[ \text{Total} = 18.81 \]
Location:
SW 1/4 Sec 6 T5N 6W
about 3/8 mi. NW of
La Salle
Staff gage on W. wing
wall conc. structure where
Godfrey ditch crosses over
in timber flume. Waste
gate in flume permits water
to be dumped into conc.
structure. This may happen
frequently.
Structure should be good
control. Believed that waste
water under 5 s-f will have
but small effect on gage. Reported
also that backwater from floods
in river will affect gage.
Nov. 24, 1940  ML
Arr. Winslows about 8:30. Had Winslow sign agreement in duplicate. One copy for W. one for Sec. Copies made for director, Pres., and men not signed. McMullen arr. about 9:45 A.M. and started test hole. At about 3 P.M. ran out of test pipe at 51'. By agreement and with NAC's consent decided to test deeper at rate of 75' per ft. beyond bottom of finished hole. Judd arr. from Denver about 3 P.M. Brat instrument.

Gravel samples taken.

Nov. 25 With Judd along arr. about 8:20. McMullen had drilled about 8'. Ran out of pipe at 90' in gravel + quit.

Nov. 26 Driller removed test pipe. Judd worked on Inst. until 10 and put 2nd coat of paint on shelter, assembled legs of shelter.
Nov. 27 Arr. alone at well about 6:15
McMillan there with casing.
Painted all joints with hot asphalt.
Casing - 14 pcs - 1 1/4" lap. = 40 1/2" long.
At a little short of 39' bit clay and
drove casing about 13' or until no
further progress could be made. Casing
sticks up about 7'. Weight on casing
about 1 1/2 tons.

Put test pipe back in hole
Had Farington paint sign on shelter.

Nov. 28

4" pipe, rusty 2nd hand 14' long
bottom 3' perf 12 burned holes per ft.
set in place inside 6'. Pulled 6'.
Boiled out 4" for 20 min. Loose
coupling at joint and when turned at top
4" separating at loose joint leaving couplings
in well
Had McMillan drive 1 1/4" sand point
84'. Had going last 10'.

Had bolt out shelter. Fastened on
8 iron legs. Dug holes for legs & set in conc.
Finished by car lights.
Nov. 29

Went around by Greeley and picked up pitcher pump at McMillan's 1425 - 6th Ave. Had Bristol recorder practically set after some trouble before Sudd arrived 11 A.M. Set connecting box from ground to bottom of shelter. Set pump on 1 1/4" pipe, sand point refused to open up. After lunch with Sudd explained instrument to Winslow. 8.91 to water from top 10" casing. Sounded casings 16' is filled level with 4" at 36.7, 50.6 to bottom of 4"

Sudd left & Winslow & I after trying to pump on sand point, tried to pull pipe with jack. Good pull but moved it but about 1". Gave it up. Returned pitcher pump. Length 22.3 plus Took Kodachrome pictures of shelter & instrument. Good weather all week.
Log of Reckham Observation Well

0-5  soil
5-17 fine gravel
17-21 coarse sand
21-21 1/2 sandy clay
21 1/2-29 gravel
29-31 clay containing gravel
31-39 gravel
39-45 tough clay
45-54 1/2 gravel up to 1"
54 1/2-55 clay
55-68 gravel
68-76 clay
76-86 fine gravel
86-90 coarse gravel

How to bill for hole

40'-10" hole @ 2.14
1 - 10" casing @ .88
3' - 4" pipe 2nd hand @ ?
11' plus \(\frac{39 \times .95}{1.35}\) = 11 + 21.7 = 32.7 @ 1.35
Perf.
Driving pipe

85.20
.88
?
44.15
3.00
3.00
13.6.6.2
Nov 29 1941 3:30 PM
Latham Seep Ditch 0.23. Just a dribbling spill. No effect on G.t. H.

Jan. 21 1942 0.16

✓ Sept 5 1942 - 0.61 - water spilling

✓ Jun 24 1943 - 0.67 - small ft spilling
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Latham Seep Ditch

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Net gage 1.32" to 1.33". Gage is 0.08" above Crest, hence true head is 1.25

Area $\pi = \frac{Q}{2.36}$

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For $Q = 1.90$ $\frac{Q}{h^2} = 108.4$ from which riders table

Just below bridge bottom weir another diversion limit for Her Est. 2.84

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*Add 2% for error in depths*

*C/I 51 cheek spillage*

*Meter 15188*
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23.50
Aug 6 1943 - Earl Hubbart
Levels on weir at outlet of Prospect Reservoir.

Rod on weir crest —
No. end 4.195
No. of center 4.158
So. of " 4.178
So. end 4.203
On 2' mark gage 2.274
On fill in channel above weir 5.35

Length of crest 18.4

Holes for draining out in crest wall which are closed with planks. Today cracks show Hubbart says no leak when wet.
No plate on ends
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**Turnouts**

1. 2' weir. \( H = .67 \) - no air

2. 4' weir. \( H = .29 \) - air - slow water

3. 3' weir height of crest .6 \( H = 3.1 \) - an

4. 2' weir height of crest .7 \( H = 6.7 \) - fast water
Aug 17th 43 3:15 P.M.
3:14 P.M.
6 Suppr. weir air occasionally CH 60
method H = .64 Height of crest 12

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Aug. 12

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\[\frac{11.99}{11.68} = H = 0.68\]

On stand. weir

Wahbant would have reported about 10,200 c.f. or 18% under.
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Results of loss in seepage in 4 mi. of canal Aug 12

Upper meas -- 84.1

Diversions
over weirs - est. 12.6
measured 12.0
12.9

Lower meas.
48.4

Loss
73.3
73.0
10.8
11.2

Delivery 53.0 incl all deliv.
10.0 above Prospect
43.0 for Prospect
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Gage 41 1/2" with air - .38 1/2" without

Hubbard would have reported about 5.5 see ft. or 20% under
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\[6.56 = 14.046\]

No. 1 diversion 2' weir, \( H = 0.60 \)
Height of crest 8

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From Earl Hobart
Weir reading Sept. 3, 1943 = 0.92 (Q = 52.8)
Total deliveries = 32.0
One delivery bet. weir + Prospect = 3.0
\[
\frac{3.0}{29.0}
\]

These deliveries were string by at least 2 cfs on this date.
Simla  Apr. 6, 1944

County agent David Rice did not get back from a Denver meeting until about 10 A.M. so it was planned to start out directly after lunch. Went in Rice's car and accompanied by a well driller RC. Bowland from Jola, Kans. and Coulkins, district FSA rep.

Went first to Ray Shoup's place just across the river from Simla who showed us a line laying 70-80 acres on the south side of river just west of town next to river. Would like to have some test holes drilled.

Next to Ray Chandler 8 miles north of Simla on a branch of East Bijou. This is the McCutchen place in notes of Jan 13, 1938 40 ac. of flat land I would like a well. This does not look very good to me, high above crest and close to headwater. A neighbor south, Fred Meyers also interested.

Next to H. Deval in N.E. 18 95 60 N 50 ac. on bottom east side of East Bijou looks good. Would like test holes drilled. Has 56 ac. in west side Bijou.
Next to Geo Young who purchased last year from Thornton for $750 per ac.
SE 8 95-60W. Young said Thornton had augered down 30' to shale along south line and found 20' sand. 50-70 ac.
Carl Ehmann has 20 ac about 1/2 miles below Young and is interested.

Stopped next at Cole's newly from Kans. in SE sec. 9. This is on same drainings as Chandler and does not look promising.
Has 30-50 ac. Would like to pump on.
Next drove to Eads and met Mr. Wood and promised to go to his place tomorrow on way back to St. Collins. Picked up a Mrs. Grants to take back to Lima. Came back and went into Murick's ranch on East Byron. One stock well 15' to shale. Am to see him again on next trip. 1600 acres 4000 cattle. Back Lima 7 P.M.

Apr. 7. Rice took me to see a man by name of Nichols SE of Matheen. Went to his home just when he was tending grinding so Rice & I went
3 miles south to look at land which was in S.W. & 125, 57 W. Maybe 40 ac of sandy loam fairly flat in bottom of a branch. North Rush Cr. Creek has a sand bed 30-40’ wide but valley quite narrow. Water must be within 10’ or so on land. Not a very promising site for pump in. Nothing terrigenous gravels etc. Soil pretty sandy. Last advice was to try to get some alfalfa started without irrigation roots will reach groundwater.

After lunch started towards home ineton car. First stop to get a sample of insides of a stub from a place a few miles NW of simla that Ries purchased. 5 head had died cause unknown. To take sample to H. Collins. Nov 17 miles north to Wood in NW 1-8560 W. This is on Wilson Cr. Has 40-50 acres of good flat land on bottoms now in cultivation. The valley is narrow some places 700-800 feet and I did not
leave him much encouragement in obtaining a well. 
Drove north west to Lambert who lives in NW 28 7S 60 W. Not at home. Wife said landman in NW 30 7-60 and I looked at that from road 1/4 mile or so away. Looked O.K. as to Topog. So now in section 5 25-30 acres? 
Valley wider than Wilson Cr. 1/4 miles wide. Stream channel is quite wide. Would say he had reasonable chance to find well. 
went then north to Byers. Roads dry but rough when not dugged.
Pettibone farm
Well 84' deep casing
Pump Colo Motor 20 hp

Water meas in prepared pipe (St.) rolled into ditch 6' long D=10%/6

K=1.23

150 revs in 53.8, 53.2, 53.3, 49.5
2.81 R/s = 2.66 R/s

2.66 x 132 = 618 gpm

Meter Wh type C 40A 200 V.

20 rev in 53.1, 53.0

Leaks 10 gpm
Fitzsimmons

Well

Pump Colo. Meter Century. 15hp

Lift - top casing 46.4

Q by open channel

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<td>0</td>
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</tbody>
</table>

Pipe 10" ID Water depth 0.4 ft = 660 gpm

1st run - no load

Tach 307
Dyn 1.1
Tach 340, rev. counter 363-357
Dyn 1.2
Tach 370, rev. counter 398
Dyn 1.2
Tach 459, rev. count 480
Dyn 1.0
Tach 545, rev. C 562
Dyn 1.0
Tach 714, rev. C 731
Dyn 1.0
Tach 857, rev 867
Dyn 1.1 to 1.2
Tach 980, rev. co. 985
Dyn 1.2
Tach - rev. co. 1140
Dyn 1.2 - vi brake 11-13
Tach 1416, 1503
Dyn 0.6 - 0.7
Tach 1740, 1782, 1281
Dyn 1.5 - 1.7
No Flow Conditions

1. Suction +1.46  -2.28
   Pressure +0.95  -1.42
   Orifice 8.49

2. Suction +1.45  -2.05
   Pressure 2.05  -2.55
   Dyn 2.75  3.0
   Tach 1048  rev.ca. 1119 1101

3. Orifice 9.43-840
   Suction +1.37  -1.93
   Pressure +2.12  -2.62
   Tach 1160  rev.ca. 1215, 1218
   Dyn. 3.3  3.4  3.3

4. Orifice 8.74
   Suction +1.22  -1.86
   Pressure +2.29  -2.79
   Tach 1310  rev.ca. 1378, 1375
   Dyn 3.4  3.4  3.5  3.4

5. Orifice 9.42
   Suction +1.71  -2.34
   Pressure +2.72  -3.28
   Tach 1480  rev.ca. 1538, 1544
   Dyn 2.8  2.9  2.8
# 6
Orifice 9.84
Suction 1.70 - 2.32
Pressure ±2.83 - 3.38
Tach 1570 Rev. Co 1638, 1640
Dyn 3.25

# 7
Orifice 10.22
Suction 1.93 - 2.26
Pressure ±3.02 - 3.59
Tach 1703 Rev Co 1758 1766
Dyn 4.0, 4.1, 4.2, 4.0

# 8
Orifice 10.74
Suction 1.59 - 2.85
Pressure ±3.35 - 3.38
Tach 1940 Rev Co 1920, 1926
Dyn 4.7, 4.8, 4.6 (4.54, 50)
Cracking sound at pump. No water at top of pipe

# 9
Orifice 11.55, 11.54
Suction 1.59 - 2.16
Pressure ±3.69 - 4.30
Tach 2015 Rev Co 2080, 2088
Dyn 5.4, 5.3
Orifice 10.04

Suction +1.40 - 2.20
Pressure +4.64 - 5.20

Tech Rev. 2082 2084

Dyna 6.2, 6.3, 6.5, 6.6 Vibr. bad
Orifice 9.24 9.18

Suction +1.61 - 2.21
Pressure +5.48 - 6.10

Reyn 2080, 2083 2080

Dyna 6.1 6.8 6.9
Orifice 8.52

Suction +1.62 - 2.25
Pressure +6.48 - 7.19

Revs 2076, 2084

Dyna 6.5 Vibr. bad

Orifice 7.54

Suction +1.58 - 2.16
Pressure +3.55 - 4.10

Revs 1780, 1785

Dyna 4.6, 4.7, 4.8, 4.7

cocking
| Orifice | 8.99 |
| Suction | +1.60 | -2.20 |
| Pressure | +4.09 | -4.62 |
| Revs | 1774 | 1782 |
| Dyn | 4.7 | 4.5 | 4.6 |

| Orifice | 8.43 |
| Suction | +1.60 | -2.21 |
| Pressure | +4.92 | -5.45 |
| Revs | 1772 | 1765 |
| Dyn | 5.7 | 5.8 | 5.9 |

| Orifice | 9.80 |
| Suction | +1.50 | -2.10 |
| Pressure | +2.89 | -3.39 |
| Revs | 1675 | 1677 |
| Dyn | 3.6 | 3.7 | 3.5 |

<p>| Orifice | 9.21 |
| Suction | +1.50 | -2.12 |
| Pressure | +3.38 | -3.82 |
| Revs | 1676 | 1676 |
| Dyn | 4.6 | 4.3 |</p>
<table>
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<tr>
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<tbody>
<tr>
<td>Suction</td>
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<tr>
<td>Pressure</td>
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<tr>
<td>Suction</td>
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<tr>
<td>Pressure</td>
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<tr>
<td>Revs</td>
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<tr>
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<tr>
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<td>Revs</td>
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<tr>
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<td>Pressure</td>
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<tr>
<td>Revs</td>
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</tr>
<tr>
<td>Dyn</td>
<td>3.5</td>
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</tbody>
</table>
Orifice 8.51
Suction +1.51  -2.14
Pressure +3.40  -3.95
Revs 1522  1523
Dyn 3.9  3.94  4.0
Ray Chapin 70-80 ac on Big Sandy
by Charles 70 ac wanted good grazing land
Fred Meyers 90 ac

4. Dee Val 5" 1/2 mi from Thornton
Wet 50 ac plus 50 ac on west side of
Geo Young Old Thornton 50-70 ac 31 deep head gate 20 ft sand
Carl Ehmann Just below Young 20 ac
Cole 30-50 ac on east side

[Handwritten diagram]
Guale Body on Drag
114th St.

\[ \begin{array}{cc}
26 & 45600000 \\
42 & 30 \\
30 & 30 \\
\end{array} \]

\[ 31 \times 24 \times 60 \]

B. Layton
W. R. Thompson

\[ 0.54500.00 \]

\[ \frac{36}{36} \]

\[ \frac{4.8}{70,000 \text{ gal/mo.}} \]

\[ \frac{24}{2235.00 \text{ gal/day}} \]

\[ 1440 \]

\[ 2225 \text{ gal/day} \]

\[ 1440 \]

\[ 78.5 \]

\[ 72.0 \]

\[ 65.0 \]

\[ 30000 \]

\[ 64008.00 \]

\[ 251.0 \]

\[ 12.5 \]

\[ 5.0 \]