

alB7 Upr Ks & gnrl cntrl



HJ-1

PINE FLAT DAM

Standing astride the Kings River 27 miles east of Fresno, California, Pine Flat Dam is one of the eight highest dams in the world and the second highest in California. This mighty concrete structure holds back a maximum of 1,100,000 acre-feet of water, supplying irrigation water to the vast agricultural empire of the rich San Joaquin Valley.

Ektachrome by Heilbron-Jones

address

*place
stamp
here*

MIRRO-KROME CARD BY H. S. CROCKER CO., INC., SAN FRANCISCO 1, CALIF.

Kaupke & Bendon

10-55

1 a-f. dropp's 1 mi = 4,000 kw ???

K's R. irrig. 4 x (Modesto + Turlock) (tho not so intensively)

Applied for power just to block B.R. Kaupke admits it!!!

Jack Rodan, near Wishon & Olive, Town distr. B.R.

Kaupke.

Jr. approp. have no assurance. Concern, e.g. Some pump, use gravity when can get it.

Schedule based on rates of flow at particular time, w/o regard to future antic-ns.

Really, Kaupke's vaunted schedule is a fixed thing, simple-minded, which he worships w the ^{dutiful} unthinking devotion of the type bureaucrat "You see, we just look up rate of flow, read across table to who gets what. If meddling bureaucrats just understood this ---- but don't, which proves again they don't understand irrig-n eng'g, local problems, & all I have achieved in my years here." Like bank clerk in "You Can't take it w You."

His big problem now is channel losses. Downstreamers have certain rts, but water seeps into channel. I didn't ask him why he didn't foresee this originally.

He is hard to interview — doesn't get what yr driving at. Secara & Bendon, the 2 idealists, were more expressive & "sympathique." K. doesn't think so much of full use, but of 'prop. rts'.

But he does claim K's R. serves 4 times area of Stanislaus (but he may have neglected S.F.)

Basically what K. beefs at re BR is just they are concerned with the convenience of others besides himself. He wants K's R to play w. alone. Lack of ability to move up to higher levels of control he fights them.

✓ KRWA filed for power site on KR just to stop BTR, says K. If got it, probly wd have developed it, but maybe not. Wanted BR out bes they might regulate flow to gen. power, which is not consistent w. releasing irrig-n water, best time. Doesn't explain how KRWA wd gen power w/o disturbing irrig-n. Same story — want full control, no coop-n.

After pine flat built, Piedra no longer natural flow, so shifted to pt above res. Ok. But doesn't admit to getting anything from P.F. - calls it flood control. Bendon says they rent space in res., & extra water will change whole pattern of cropping.
P.R. overestimates adaptability of local people.

Harris uses 5-6 ft on his pasture, isn't very careful w water. Pumps from 50 ft or so.

W. side, K- says, pump 500 ft. O'Neill, Giffin, big w. side spec, finagling in Sacto for Trinity, Feather.

Secara says Army E. plan's flood control, costly, on SJ below Madera! Bes congressman has friends there. Need more storage on Kings, SJ, Merced, Tuolumne, Stanislaus ... for irrig-n & flood control both.

Bendon says PGE power dams n.g. for flood control, tho PGE advertizes as such.

Poor coord. w. ID's on flood control. 1950, Bendon was hold'g back while downstream tribes crested, called Merced for coop-n. "Hell no, we're not running a charity here." Didn't want to miss a day gurt's power.

Class: define "profits", & "property" — bases of backward faith, but don't know what mean.

On K's R is some x big, not of diversion pts, but of
place of use. Shares of stock in People's Ditch Co., e.g. 1 share irrigates
c. 160 a. (or 640?). Once worth \$6,000, now c. \$80,000.

K. disapproves, wants appurtenant.

Bendon has some flexibility in system. But won't let them
pay money for water, to ea. other.

Has some discretion in allowing water by "need". Favors small
hard up districts that can't afford pumps.

Gets daily orders, 1-3 days in advance (depending on
location). Takes some time to xfer 150 mi. But rate of flow
moves faster than molec. of water, wave action. Completely checked
system.) also monthly, yrlly. Contract specifies yrlly? Perhaps.

Can't op. solely for convenience of ID, must reserve flood
space, & gen. power. Hence sometimes give them trouble.

✓ Must guard class I jealously, is saved.

Kaupke has some de facto flexibility. If one takes no water,
moves up to a higher flow pt. on schedule, distr. to others.

BR has worked out some swaps on KR w. Army, after tumult & shouting died. Just avoid word "integr-n".

Class I water is "sacred". There is an element of inflexibility.
Rigid I-II distinction.

FK service area is moderately compact, considering. But holes, where too slow forming I.D.s.

State Eng.s are frustrated, planned CVP & lost it. Hence later plans.

Need surer dope on how Bendon sees demand, how much flex. contracts allow. What do they order 40 yrs in advance, 1 yr, 1 mo, 1 day?

Gerlach case, they wdn't sue M&L b/c of M&L's sharp lawyers, never lost a case. But gov't has very poor lawyers, BR has to turn over to Justice Dept., they know little of matter, ignore data BR had, lose case. Ff. a spate of cases, & water theft from Mendota pool, Rank v Krug (re area betw. Friant & Mendota)

Gerlach didn't lose 'em much water, but money.

✓ 160 a lew allows 10 yrs compliance. Di Giorgio getting water.
That means he signed a contract ?? It must.

Isabella Dam was A.E.'s gift to KCLC. KCLC wd like
CVP water.

When BR builds a distr. system they charge much overhead
to it, Denver office, thus run up cost. But P.D.s. cd build their
own if wish, don't. Lower O&M on BR systems.

There are plenty of distr.s to take cl. II water, store
underground.

Last yr, state ownership getting hot, FK water users ass.
petitioned leg. leave as is. Since then, no fuss.

Orange Cone Factural Rpt, '47

p. 20 Seasonal demand in wtr. (attached)

lts of submittal - poor ground wtr. so will furnish all Cl. I. wtr.

Makes sense.

Gross area 27,021 a.

Usable " 24,030 a.

Cost of distr. net, of reinforced concrete pipe, \$5.3m (or c. \$200/a)

Altho $\frac{2}{3}$ I.D. lies below F&K canal.

p. 3 Foothill I.D. dissolved, '33, as efforts to get wtr thwarted by lignite.

1920-33, many wells drilled to start citrus, expecting later supply to materialize. Much abandoned when wtr didn't beget.

p. 4 Town of Orange Cone not included.

Frost free pd, ave. 252 days, March 15 - Nov. 22

Good thermal zone, orchard heating not needed.

p. 5 Some intermittent hardpan. Poor for gird fung. good for citrus, grapes, truck.

a few local alluvial soils good for anything

Hillsides, deep clay on granite, ok for citrus, decid. & truck, but require more care.

p. 11 No diff. of yield among land classes.

Orange Cove Factual Rpt, '47

p. 20, Seasonal demand water use

Conditions of Terra Bella [†]
Initial Ultimate
Gen mo mo

Jan	.14	.15	.1
F	.16	.17	.1
M	1.08	1.11	.1
a	4.76	4.86	1.9
M	12.03	11.99	10.5
J	17.09	17.03	15.0
J	19.19	19.15	15.8
Q	19.21	19.13	17.5
S	13.28	13.20	16.4
O	8.45	8.58	13.4
N	3.64	3.60	8.2
D	0.97	1.00	1.0

Note how much later seasons are here than in Stan. Co.

† Leeds Hill & Jewett p. 36. Median % for each mo., 1940-50.

This pattern means less overlap of periods of demand & supply; hence need more storage for given water use

Pattern probly characterizes navel, rather than area, could supply other crops in conjunction, smooth out seasonal demand.

To edge on distribn, want constant demand.

To edge on storage, want demand that changes w. supply.

To edge on both, " opt. combo.

Orange Cone Factual, 2, (1947)

p. 13 Grapes & olives, good mkt recent yrs, encourage large new plantings.
[How different the grape outlook by 1950, gloomy Madera Rpt.]

p. 13 "Yields on present plantings will probably rise as it is somewhat doubtful if existing crops are receiving an ^{optimum} ~~adequate~~ water supply."

Let's test that. (attached)

p. 15 Runoff of Sand Crk, Wahitoke Crk, all percolates, then is used. Ave. recharge 5,500 afa from these & other streams.

Deep percolation from Alca 10 est. 10,600 afa.

Rainfall used by crops est. 3300 afa.

p. 16 Σ is 19,400 afa, ave. wk supply. [cf 25-30,000 afa furnished by BR]

p. 18 7-K canal seepage will supply 10,000 afa

p. 22 Distribn system. 107 miles pipe, from 12" to 54" diameter, 500 metered outlets, to each 40 acres, or each individ. holding of down to 5 acres!!!
Min. outlet flow. 1 sf.

Cost \$5.3m, or \$198/a. for 27,621 gross acres.

08M \$6/ay

p. 23 Cost per acre ft, \$8.36 = \$3.50 to CVP + \$4.86 distribn

p. 25 Expect citrus farms to ave. 20 acres, truck farms 15, vineyards 80, pasture 120.

Orange Cove, trend of citrus yields.

Year	Acres in Citrus	Value of crop \$000	Price of ~~oranges~~ oranges & lemons \$/cwt est 2.50	Computed output \$/acre	Cwt/acre	Wtr delivery from CVP at \$000
1949	3500	800	est 2.50	203	81	3
50	3900	1200	est 2.35	308	131	10
51	3400	1200	2.60	353	136	25
52	3900	1500	2.50	385	154	28
53	3900	1000	2.40	256	107	30
54	4100	2100	3.17	512	162	31
55	4300	2200	2.94	512	174	29
56	4600	2800	3.87	609	157	26
57			4.01			26
58						

Yields before project: 232 packed boxes/acre. (p.12, Factual Rpt)
 By Mankins: ltr of 7-16-59, one packed box = 72 lbs. .
 So 232 packed boxes/acre = 16,704 lbs = 167 cwt

These very crude calculations from dubious sources $\therefore$ suggest no increase due to increased water supply.

But write Taggart for exact & complete yield data
 Also write Riverside Citrus Sta. for any studies on subject.

Estimating prices for 1949 & 50 from Bull 763 certainly is dramatic increase from '49, related to Δ water. But is negated by allegation in Factual Rpt. of 232 packed boxes/acre before water.

Orange Cone Factual, 3

Navel here mature earlier, command a premium, are about as high as
Valencias. - so in this area, Navel & Valencia price considered same.

p. 28 Payment capacity \$34.50/af., using 2.1 afay

Data to abstract, 3

8. ~~Diversion of Fresno Slough & James By-pass~~ — to complete
~~Sf diversions. Is this really nec?~~

9. Contribution of Kings R. to Sf via James By-Pass etc.

This may show up as ~~acc~~ part of accretions between Gravelly Ford &

~~Fremont Dam~~ (or Whitehouse) & Fremont Ford.

Better is between Whitehouse & Mdtc.

So fake trace this: "unmeasured accretions" to Sf between Whitehouse

& Mdtc, as in T.S., p. 32, '55 Rpt.

also get $\leq$ diversions from James Bypass. But these diversions
are lumped w. Mdtc. canals in accretions table, & when Kings is

spilling we can assume these diversions are Kings R. w. t.

check this by writing C. Smith for flows of James By-pass & Fresno
Slough, 1931-date.

10. ~~acreage ind. summary.~~

~~1946-55 is~~ p. 35.

~~p. 123 is better?~~

Consol 10

9¢ a "chuckster." 4.80
83¢ a gravity wtr: 4.00
60¢ a pump 1.20

1. Report
2. Opns. PF affect? -- change to demand?
3. Use of tax rate. \$4.
4. PF affect crop pattern? Δ output?
5. Wtr table.
6. Nos. new pumps & gravity.
7. Why vines, when Lemoore not?
8. Recharge opns? 1,000 a ponds. 60,000 a/a in ponds, if surplus.
Take 300 st.
9. Ground wtr quality ok?
10. No. of ditch tenders. ³⁰ Radio control like Lindmore possible?
11. Wd pump less if had one unified overall distr.?
12. How opns differ from other distrs?
13. Can farms swap wtr? Go off surface to pumps if wish? If not, does this discourage chang's to surface?
14. Want separate contract w PF?
15. Outside lands want in? Price?

Grapes, peaches, alf.

Johnson, Waldo, Assessor of CID.

Horrid description of PD selling stock, as tho immoral. \$50,000 for $\frac{1}{4}$ share.

Most laterals lack capacity for demand service. Rotate. Much is up to ditch tender. 30 of them. Gather ea. AM w. ID w-master to program flows. Good "good-enough-for-Grandpa" attitude.

^{Ground}
1 Wtr flows sw. Keep many records. W of 99, goes down quicker b/c of pumps w of ID. Comes up later than e. side, b/c recharge wtr flows there.

Can absorb 300 sl w/o cease. (Smith says 500.) Old drainage channel is one of best.

Ground wtr all good.

Bought some BR wtr from Chonchilla this yr.

P7 helps, b/c whole ID takes later wtr. But still rotate to individuals. If this is truly due to inadequate ditch capac., how much worse than were things when no storage! How inadequately they must be ready to handle spring flows.

Do they get more total wtr now? Who gets flood wtr stored behind P7? Does gov. own them b/c developed them? Does indenture claim them for TLB WSD etc?

~~See Al Harnay. BR Tracy office, L.V., near Byram.~~

Clarence Smith. Security Bank Bldg.

1. How binding is "agreement" or indenture? Cd it break out in new fight?
Does sf big affect? Old judgements at gates - indentures at Piedra. Channel losses are big. River used to gain. Right now a gain, don't know where coming from.
2. All rip rts quantified? No! Some pumping now, boosting
3. Export prohibited? Vague. Boundaries of "service area" kept undefined, ~~so~~ but one co. objected to KRWAT bdy, wanted to expand.
4. Change diversion pt? James to PD? PD to anywhere, e.g.
Huron?
Change time of it?
5. Chang's to demand system, affect wtr-master ops? Need more men?
6. Recent copies schedule & rpts of diversions?
7. Attitude toward swapping. E.g. headwaters to LA ag.
8. Integrating ops w PF - e.g. bring's an order down the river.
are nat. flows exempt 160 a law?
9. PF affect crop pattern?
10. Morig devices
11. Wtr table ris'g?
12. What wd improve op-ms? What working towards?
13. Why Kings Co. no trees & vines?
Why Lemoore no pumps before PF?
14. Hi: pump rates + deeper lifts + storage driving out pumps?
15. How FID get 600,000 at 6'g yr?

Smith, 2

16. Many changes to demand system, w P7?

17. No. zamjers. Radio control possible, like Lindmore?
Gates are controlled by member employees. Msrq device at each gate.

18. Ground wtr quality?

19. Wd overall dist. reduce pump's?

20. Sources of wtr? - CCID etc? Merud etc?

CCID make sense re bad ground w? Why worse than W Stam? - which
has bn apply's worse surface wtr yrs.

21. River all filled on? How com, w/o use?

22. Service area & wtr flow

Smith.

Preproject, downstream took less channel losses than post -- I don't quite get why.

'49 agreement allowed stored wtr, before was developed.

Filed on stored wtr. But Bd. won't approve, until permanent contract.

WRBd wants KRCB to simplify their allocations, will let them take it all, alloc. by schedule. Don't want to get into intra-Kings allocations.

BR developed the flood wtrs, cd export. Or cd. claim as U.S., & sell.

Far west side pumping thought to tap low aquifer that gets Sierra wtr. Thus lower hydrostatic pressure, help lower e. side wtr. Some lands, near trough of valley, ground wtr fell after W side pump's began.

Upper districts, few excess landholders.

Flexibility in system. E.g. Burrell Hyde owns 67% of ditch just above Murphy Slough. -- Liberty Canal. Sold some surplus. Also x'f'd to Murphy, but this time, to avoid lawsuits, dug cutoff ditch from Lib. to Murph. kept same diversion pt.

James ID & Trang. were getting huge channel losses but diversions just upstream were storing. That is why they preferred take w from Mts. But BR said by storing in P# they were Ag their rts on sf. w'd have to pay for extra. So they brought down all Kings rts. they sank in sand

Smith, 2

~~James & Tracy. Lacked space to store this wtr evidently.~~

Is no swapping of Feb wtr for June wtr.

If you have extra wtr you don't take, any time, goes to "head of the schedule", i.e. next guy on schedule gets it. Can't sell it. Tho even here he doesn't seem too sure but what it might have happened sometime. There is diff. of agreement, & rigid order.

Alta is sandier than Consol, & Fresno almost as much. Lack old lake sites mainly, which Consol. bought long ago cheap.

Rips around Lemoore put snorkel in river. KRWLA tries stop, says not nat. flow. Rips form aggressive org-n, assess selves 50¢/a to fight. WA tries get their takings mtd, doesn't work. In flux — river by no means settled. This, plus Ag channel losses, not contemplated in orig. agreement, call for patching up. Also lack of contract. Also upper diverters may withdraw concession made recently to absorb \$30 st channel losses.

Gurby can move a diversion pt. downstream w/o protest. But if move upstream, are gaining some channel losses, can't do it. Burrell Hyde avoided moving diversion downstream to placate others on Lib Canal.

Smith, 3

BR invited in originally to help keep PT site from NPS, KCONP.

Had Chama get contract under demos, where excess holders cd pay off lump sum. Republicans don't dare do it. McKay wd hv, but retired b/c got around to it. Seaton afraid of campaign issue. So when proposed contract got clear to top, wdnt sign, tho BR approved. Bes came up w gimmick that no one clear until all clear.

\$14.25m settled as price to pay. Originally KRWA wd pay only \$10m. Shd hv paid \$14.25m when cd, gotten firm contract.

Lemore etc are only ones chang'g to demand system. Lake is on its longtemp. Others will change as wtr gets scarcer. Rotation, four after takes wtr doesn't need b/c it's his turn.

Some canals being lined, rt along. (What need is Δ capac., not line)

Figured PT wd Δ their wtr 10%.

Wants wtr price set at Δ , same to all, regardless of priority.

Basic Dope on Alta ID (to supplement Goldschmitt's study) (Now in Kern R. file)

No wells, (of district), no reservoirs, just gravity, from Kings river. Delivered 1.5 acre ft. per acre served (probably supplemented by private pumping.) (if small farms in ID can have supplemental pumps, high opt. size of pumps isn't cause of big farms elsewhere)

(These Kings R. I.D.s must have most of their outlay on distrib. systems, as all are served by gravity. Incidentally, How is it they are so good, if they never had to issue heavy bonds to pay for big works? Maybe they are in such a situation that they have other high expenditures? Check this. For Merced, with its Exchequer, should have better land allocation, by my theories, unless something prevented heavy bonding there, caused it here)

Water free, '46. Took about \$1/acre assessment. All expenditures were O&M. 121,000 acres assessed. 40,000 in grapes, 40,000 in pasture, biggest crop acreages.

In 1902 a 500,000\$ refunding bond issue. As of 1929, nothing in default, 271,000\$ still outstanding, scheduled to be all retired by 1943.

Merced, by contrast, had 16m\$ outstanding bonds in 1929, all originally issued 1922-6. Montague had 1.3m, Nevada 7m, etc.

(But I don't think this figure indicates nec. that Alta never had more bonds in past. ~~For~~ In fact it is quite clear this list which is in back of Adams only refers to bond~~xxxx~~ issues of which some part is still outstanding)

Adams, p. 214. Alta issued \$410,000 in bonds in 1890, to pay water right holders of 76 co. (Interesting. I.D.s had to issue bonds to buy water rights, thus improved allocation of land in ID. Here is a curious contradiction: because water did have a cap. value, nec. for id to buy it, thus lowering land's cap. value, improving allocation)

1946, Alta is entirely free of debt, while Merced (which also has much higher O&M charges) still has much debt. Prediction: Merced will be subdivided, Alta will be consolidated. Could make interesting thesis on this -- check current trends, cf. with past trends, correlate with bonds etc.

1929, county, school district, & municip. bonds other than ID were 1.1m, for lands in Alta ID.

Only bonds Alta ever issued were 675,000\$ in 1889, & refunding issue of 500,000, 1902.

Ave. 1929 farm, 54 acres, rather wide dispersion of sizes -- many small, & some pretty big, one 1500 & one 2000.

In general I should say that fairly good allocation here is due to fact land is not the best -- & perhaps esp. that water rights not the best, having a late priority on King's river, some yrs.

Alta ID, 2

don't get much water at all, pretty risky. (on other hand, this calls for people with capital, who can wait. But this means productive capital, not land buying capital. Lowers land futures)

(Just at present, as storage on Kings is anticip., makes land more of an "investment", worsens allocation. In this area, this factor must have been in operation a long time, as they have expected it for --well, in 1929 they expected it soon)

Pumps are widespread -- this would also make farms larger, tho it hasn't prevented smallness.

By & large, Alta ID probly represents the morcellement effect from cooperative water supply, more than from lvt & bonding, tho these have played some role.