MEMORANDUM

April 7, 1998

TO: Allen Merritt

FROM: Cindy Hodges

RE: Rock Creek Water District Measuring Device Inventory

On Thursday, April 2, 1998, I met with Chuck Helman, Watermaster of Rock Creek Water District 47-O, to inspect all measuring devices and diversion works for compliance with Department standards.

My overall impression with this Water District was that routine yearly maintenance is not being performed on the many of the devices to keep them in proper operating condition for each season, and several have simply fallen into disrepair. There have been some recent upgrades to some devices and/or diversion works which should help with regulation this season. Other upgrades or maintenance still needs to be scheduled. Mr. Helman advised me there was a resolution passed by the District this year that all IDWR recommended modifications be in place by the start of the 1999 irrigation season. Many of my recommendations include maintenance or cleaning that should be required to be done *before flows are allowed to be diverted this year.* I don't think it unreasonable that any new construction or major modifications be delayed until the end of this season.

Only about half of the gravity diversion facilities have been constructed with controllable *and* lockable works (ie, screw gate type), although most others use an adjustable slide gate which could be converted to lockable. Pump diversions are more diverse but most have a lockable gate valve. I didn't get the feeling that routine security is really an issue. On the contrary, Mr. Helman indicated that most users are cooperative and compliant and the need for physical control depends on the water user. In general I agree that the lockup policy should be only as strict as the situation demands. As a matter of equity, however, all diversions must be able to be locked if necessary.

Mr. Helman was especially concerned that a secured diversion stay secured. He had some locks and chains cut and removed last year after the diversion was posted with the orange WARNING tag. He was frustrated that IDWR did not or could not penalize this infraction. Since this act is a misdemeanor provided for outside the water law statutes, I advised that the county Sheriff be contacted on the next ocurrance and a citation requested.

The other problem the Watermaster relayed to me was the difficulty of obtaining an accurate measurement over some devices at high flows. There were a few devices in place which were either not sized properly to accommodate the full recorded right, or which were set in such a manner that the device submerged at only moderate flows. An approach I have recommended is to notify owners of marginal or substandard devices that, until devices are modified or repaired, delivery will be limited only to that amount which can be accurately measured (which might be zero). If the owner wishes to receive a full allotment of water, the recommended modification will have to be completed.

Following is a list of my findings and recommendations for each site which you may share with each water user as we had discussed. Photos are also attached for your reference. If you have questions regarding any particular diversion please call me.

ROCK CREEK WATER DISTRICT DIVERSION INVENTORY April 2, 1998

This list begins at the uppermost diversion and moves downstream, and represents no particular order of priority.

1. Helman East Side diversion.

Has not been used in some years (flows diverted at other points); ditch is overgrown. An adequate lockable diversion works and measuring device must be installed before diversion may occur.

2a. Helman North diversion, Fifth Fork

Diversion works is slide gate only with no lockable capability. Suggested that an eye bolt be fastened near the top of the slide frame and holes drilled in the gate so that it may be padlocked at various positions.

2 foot Cipolletti weir, handmade, acceptable construction. Location of weir is poor, just below a bend in the ditch. This weir should be moved downstream in the ditch at least 20 feet, possibly below the culvert, and an adequate weir pool constructed.

2b. Helman South diversion, Fifth Fork

Diversion works description and recommendation same as for North diversion.

2 foot Cipolletti weir, handmade, acceptable construction and location. The hillside above the ditch has sloughed into the weir pool and this needs to be redug when the ditch is cleaned.

3. Frazier pump and Ranchettes

Frazier pumps directly from Rock Creek. Pump is used as a booster for a deep well when not pumping from the creek. A valve may be used to regulate priority cuts. The Watermaster should verify that the intake line is removed from the creek and connected to the well after priority cutoff.

This pump has a flow meter which is reported to work OK, but which has never been calibrated by IDWR. The meter should be verified using a standard flow meter.

12 subdivided 5-acre lots, each with 3 inches of water rights, are owned by 9 individuals who also each pump directly from the creek using 3-5 HP pumps. These systems have been estimated by the Watermaster as providing approximately one-half miner's inch to each sprinkler head being operated. Each five-acre parcel is allowed no more than six sprinklers per irrigation set. There are likely no physical controls. We could require valves to be installed on discharge lines. When the Frazier meter is calibrated, it would also be a good idea to measure a few of these small systems to confirm the discharge rates. When priority cuts are made for these rights, the pumps and/or intake lines should be removed by the owners and the Watermaster should verify in some manner that each system is dismantled for the season.

4. Crockett weir

Diversion works is a sliding gate which could be made lockable by drilling a hole near the top of the slide frame and several holes in the same side of the gate so it could be secured in various positions.

Weir is not acceptable in its present condition and location. The weir blade is bent in one spot and the device is not level. It is presently placed just downstream from a sharp bend in the ditch. The device must be removed, the blade straightened, and the weir reset upstream approximately 6 feet to obtain an adequate straight run of ditch above the weir. A weir pool needs to be excavated and the weir may need to be elevated slightly in order to meet all installation criteria. If a Parshall flume is installed, the same location would be acceptable and the entry pool shouldn't be necessary.

5a. Crockett south pump

Diversion works is a 20HP pump into pressurized mainlines. There is no measuring device; Watermaster has been estimating diversion based on number of

sprinklers or lines operating. This method can be fairly accurate as long as the system is operated in a consistent manner. To be sure, this pump should be measured at all operating conditions to verify discharge. There is a valve present for adjustments and control. At priority cutoff, the pump and/or intake line should be removed and Watermaster should verify that the system is dismantled for the season.

5b. Crockett north pump

Diversion system description and recommendations same as for south pump.

6. Norton Ditch weir

Diversion works is a metal gate covering a culvert. Either a good sliding gate or screw gate must be installed. A sliding gate should be converted to a lockable works prior to installation by drilling positioning holes for a padlock.

Handmade 3' Cipolletti weir is an acceptable construction. However, weir is leaning and rubbish must be cleaned from the upstream side. After resetting device, be sure and check weir pool criteria and measuring stake for level.

7. East Ditch

Good diversion works - screw gate.

Metal 4' Parshall flume is in good condition. Should check for level at the beginning of each season.

8. Rock Creek Ranch

Good diversion works - screw gate.

Good 4' Cipolletti weir in cement structure; has developed leaks around and below the blade which must be repaired before the season for accurate measurement of all flows. There is a good spot for a permanent staff gauge on the cement sidewall approximately 4 feet upstream from the weir - not mandatory but would be a nice addition for ease of measurement. If attached, check with Watermaster for exact location and be sure bottom of gauge is level with weir crest.

9. West Ditch

Screw gates at main diversion works and also at adjusting spillway just above the weir - both OK.

6' Cipolletti weir in permanent concrete footing. Weir blade has been removed for ditch cleaning but was on site and is in good shape. Most of ditch has been cleaned but work remains in weir pool area - 1-2 feet of silt has been left against the upstream side of the weir base which must be removed for proper contraction of flows. The bank around the footing on the west side needs to be filled in and stabilized where there has been a small wash.

10. Gray pump and holding pond

Earthen pond and dam with 60HP pump. Pond level is static when pump is not operating (self regulates). A Parshall flume at this site has been removed because it was ineffective.

An old Master flowmeter installed on the pump discharge does not work consistently; these meters are not reliable for use with surface water. Watermaster has been estimating flows based on number of sprinklers or lines operating. Both electric panel and main valve on pump could be locked, providing adequate Watermaster control if required. A measurement of this pump at all operating conditions should be made with a standard meter to verify its pumping capacity. Recommend that because of potential for variable diversions at this site, gate valve might be marked or settings noted at several flow rates.

11. Gray diversion at Diana's weir

Good lockable screw gate in cement footing.

3' Cipolletti weir looks OK but needs cleaned and weir pool re-established. A new culvert downstream should take care of the exit flow problems of last year. If weir still submerges at normal to high flows, it will need to be raised and sized up to 4' crest.

12. Dulin High-line canal weir

No controllable or lockable diversion structure. Watermaster reports this diversion is seldom used and washes out easily. Only a portion of the original concrete dam is still in place. A suitable headgate is required if water user wishes to divert flows. I suggested an adjustable check gate positioned a little further down the ditch to help protect it from spring flows. The earth and rock retaining dam could be left in place on the channel until high flows subside.

3' Cipolletti weir is positioned in a permanent box just upstream from canal crossing - in good shape but weir pool needs cleaned and enlarged.

13. Funk weir at Dulin driveway

Lockable screw headgate OK.

Weir is buried in gravel - not acceptable for measurement. If ditch and downstream culvert are dug out and weir is reset, the existing 3' weir blade could likely be used. Weir crest needs to be at least 8" above bottom of ditch to provide adequate fall at anticipated high flows. There is also not quite enough distance between the outlet pipe and the weir, as the pipe emerges right into the weir pool. Elevating the weir may submerge the pipe. This could be workable but I can't say without inspecting it in operation. Positioning the weir across the road is not possible due to divergence of ditches.

14. Funk cellar pump

15HP pump with Master meter. Both electrical panel and system main valve are lockable if necessary for Watermaster control.

Meter does not always work but was verified last summer by IDWR staff and was accurate within an acceptable range at the time. System pumps to open discharge and has only one basic operating condition. It is acceptable for Watermaster to continue using last year's verified flow whenever the system is running, if that is acceptable to water user.

15. Mulberry weir on Stricker Ditch

Diversion works has good screw gate; diverting a small flow on date of inspection.

4' weir, adequate at lower flows. However, operating close to submergence at time of visit, approximately 4 cfs. At much higher flows, would not yield an accurate reading. Last year's temporary solution of an additional plate on the weir opening to raise the crest is not satisfactory for the long term. The entire weir blade needs to be raised so that the crest is at least 30" above the bottom of the ditch, to allow for sufficient operating conditions at the maximum water right flow. At this higher elevation, wing walls may have to be extended and the weir pool enlarged. Alternatively, a 5' or 6' weir could be installed; bulkhead dimensions would have to be increased accordingly.

16. Mulberry pump

60HP pump from flow-through holding pond. Pump has no flow meter, delivers to pressurized mainline. This system, like others, could have a flow meter installed, or have discharges estimated. It must be assessed with a standard meter to confirm flows at various operating conditions. All irrigated acres must be confirmed with Watermaster.

4-2-98 W/ Watermaster Chuck Heeman
(Weir is too small for total allowable flow)

① Mulberry – Wing walls too short, weir pool not quite adequate, [illegible] OK at lower flows [illegible] not at higher. At W.M. request [illegible] added [illegible] to weir to raise crest but [illegible] non std length hard to [illegible]. Has cut [illegible].
Lockable gate OK (Stricker Ditch)
raise blade, dig out pool, extend wing walls
photo [illegible]
[illegible]

60 HP (W [illegible])
② Mulberry pump from [illegible] [illegible] [illegible] from [illegible] ditch [illegible]
[illegible]
flow meter [illegible] system assessment [illegible] OK for [illegible]?
no lockable [illegible] diversion [illegible]?
[illegible] adequate [illegible]
photo [illegible] See [illegible]

[illegible] pump 15 HP (Master)
③ Funk pump – Flowmeter doesn't work well. Burke measured a few years ago @ [illegible] inches, [illegible] [illegible] lockable [illegible] OK
[illegible] fairly constant [illegible] discharge
Maybe [illegible]
lock [illegible] pump
[illegible] established [illegible] years
[illegible] flowing [illegible]
valid [illegible] forfeiture issue?
photo 3,4

(4) Funk (Dixon) main — Not [illegible] — well built,
[illegible]
Slop plate could be used — 3" slightly [illegible]
[illegible] at [illegible] 8" from [illegible] based on 2 cfs
head flow [illegible] ± [illegible] ditch
headgate locking etc
photo 5

(5) Dixon — Canal [illegible] pipe [illegible]
Blade [illegible] seldom used, No [illegible]
cleaned below weir in weir pool
otherwise [illegible] — [illegible]
photo 6,7
[illegible] or [illegible] structure — Some [illegible]
problem [illegible] ?

(6) Camp diversion (Dixon main) used by [illegible] check
lockable gate in cement [illegible],
weir 3" pipe [illegible] slope [illegible] fall
weir pool needs cleaned out, [illegible]
(see photo 8) [illegible]
exit [illegible] of last year [illegible]

3 dimensions [illegible]

(7) [illegible] pump 60 HP [illegible] — [illegible]
from [illegible]
[illegible] Meter motor
[illegible] has estimated flow using
discharge from Sprinkler. Has fuel priority
[illegible] ?

photo 11, 12

11) Normal ... Well ... D. Crockett ...
... header ... blade
... to vertical ...
Slipping ... slip ...
... plate.
Sliding ... adjustable, not
lockable. Dan ... ok

(12) Crockett North pump 20 HP (450 gpm rate)
estimated by sprinkler discharge
Control panel not lockable. Single valve
on outlet. photo 13
... meas. device ... P/D ...

(13) Crockett South pump 20 HP - Same as above
... valve control ...

(14) Crockett weir - Not acceptable. Needs to
be relocated in straight run of ditch and
raised, ... pool created. If Parshall flume
is used (1") ditch will need to be leveled
... photo 15, 16
Diversions = Sliding gate, could be made
lockable by drilling holes in plate & one
... (culvert to ... ditch ...

(15) Frazier – pump + [illegible] [illegible]

12 Franchette lots ([illegible] each) using 3 – 5 HP [illegible]

(7 [illegible]) each lot has 1.5 in. of [illegible] of 120 [illegible] [illegible]

– have been limited to 6 [illegible] [illegible]

[illegible] in 181 [illegible]

[illegible] depending on [illegible]

[illegible] Ameron [illegible] has [illegible] from [illegible]

w/ [illegible] (Fi [illegible]) [illegible]

[illegible] opp [illegible] [illegible]) [illegible]

[illegible] had [illegible]

[illegible] 17. Has [illegible] [illegible]

(16) [illegible] North + South plants (Fowl)

[illegible] div. [illegible] [illegible]

[illegible] North [illegible]

[illegible]

[illegible]

[illegible] South [illegible] [illegible] ok but

[illegible] to be [illegible]

(17) Helman – [illegible]

[illegible]

[illegible]