


MEMORANDUM

DATE: December 12, 2005

TO: Karl Dreher

THROUGH: Tim Luke, Gary Spackman, Dave Tuthill

FROM: Cindy Yenter 

RE: Review of Voluntary Reduction Acres Included as a part of Mitigation Plans Submitted by North Snake and Magic Valley Ground Water Districts

I have completed the review of reduction acres submitted by the North Snake Ground Water District (NSGWD) and Magic Valley Ground Water District (MVGWD) in response to the Blue Lakes and Clear Springs calls. This is a summary of work completed by other staff and myself during the 2005 irrigation season, a discussion of problems encountered, and preliminary conclusions.

Reduction plan materials were received from the ground water users on three separate dates: June 14, 2005, as a part of IGWA's initial *Response to Director's June 7, 2005 Order*; July 19, 2005, as a part of IGWA's *Second Supplemental Response*; and July 29, 2005, as a part of IGWA's *Third Supplemental Response*.

Conversion projects within the NSGWD are not within scope of this memo. Mitigation credit for conversion projects, where irrigation from ground water has been partly or entirely replaced with surface water, will be addressed in a separate memo, when we have received all the data necessary for analysis.

Office Review of Submitted Materials

In-office review of submitted reduction acres was conducted first. IDWR staff including Tim Luke, Nick Miller, Corbin Knowles, Troy Winward, Kate Pickett, myself and some members of the state office permits section, were involved in office review. The review steps were basically as follows, although the sequence could vary and all steps were not necessarily performed by the same person:

1. Idled acres were digitized and ArcView shape files created for subject areas. Not all acres were digitized if it was obvious that they did not qualify.
2. Shapes were compared to both 2004 and 2005 satellite imagery to determine irrigation status for each year. Two images were available for each year, enhancing ability to spot early or late cropping (*Figs. 1 and 2*).
3. Magic Valley idled acres were compared with the 2004 MVGWD set-aside database. This database was not submitted by MVGWD until this season, and was not verified by IDWR during 2004.
4. Supplemental ground water rights were identified. NSGWD acres were compared with a North Side Canal Company ArcView layer that shows locations of surface water deliveries to active shareholders. This layer is current as of 2 years ago. Some NSGWD supplemental rights were identified from review of water right comments. The

NSGWD spreadsheet also noted if acres would be irrigated from another source during 2005. Magic Valley supplemental rights were identified based on water right comments. Very few acres in MVGWD have supplemental ground water rights, although there is some overlap and commingling with water rights from the A&B and Minidoka Irrigation Districts.

5. Water rights were verified on all eligible acres. Water right proof reports were reviewed for conditions pertaining to supplemental use, overlapping rights, transfer mitigation status, permissible place of use acreage limitations, etc. which might disqualify the acres for reduction credit.
6. Water rights on idled acres were cross-checked for water bank enrollment, pending transfers, and participation in a North Snake conversion project.

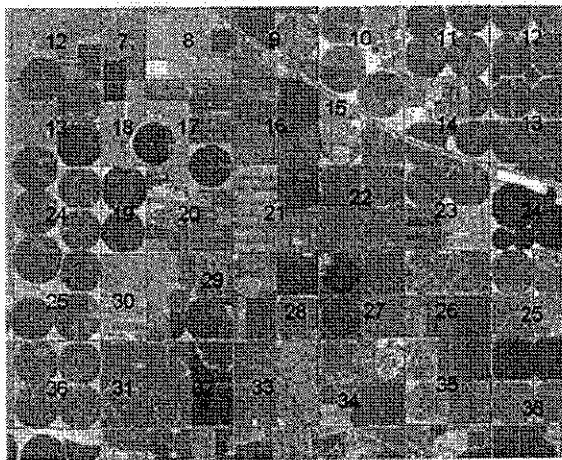


Fig 1 2004 NAIP Image with reduction shapefile

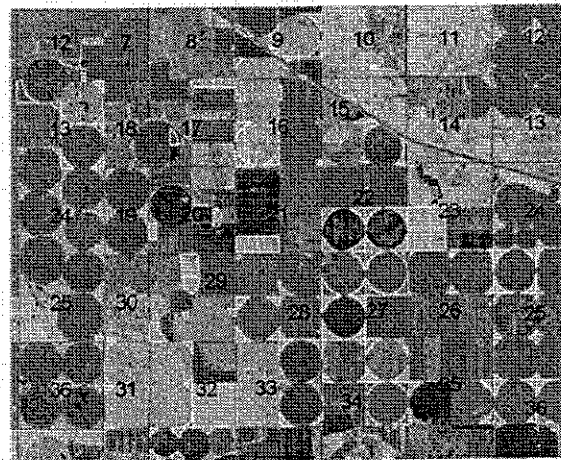


Fig 2 2005 Spot Image with reduction shapefile

In accordance with the May 19, 2005 Order, all acres which did not satisfy the 2004 irrigation criteria, or the requirement for enrollment in the MVG 2004 set-aside, did not qualify for 2005 reduction credit. Acres meeting the 2004 criteria but found irrigated in 2005 were also eliminated. This set included NSGWD acres that were irrigated with another water source during 2005, even though the supplemental ground water right was not supposed to be diverted (*see later discussion for acres irrigated with another water source*). Acres under end guns were not accepted. Parcels less than 1 acre were not accepted. Lands under supplemental irrigation, which were completely dried up in 2005, were given credit at a reduced rate of 30% of total acres. The following table lists various combinations of irrigation criteria and the resulting eligibility status:

Irrigated 2004	Irrigated 2005	MVGWD 2004 set-aside	NSGWD Supplemental	Eligible for Reduction Credit
NO	NO	NO		NO
NO	NO	YES		YES
YES	NO	NO		YES
YES	NO		NO	YES
YES	NO		YES	YES, 30%
YES	YES		YES	NO

Field verification of eligible acres

After initial eligibility status was determined, eligible acres were verified by on-site field review. Corbin Knowles, Troy Winward and Cindy Yenter conducted the field verifications. Most eligible acres were confirmed as non-irrigated, although a small number were found under late-season irrigation and disqualified. The field verifications in MVGWD did not occur until mid September when most crops were already harvested. This did not hinder the verification process much except for fields in small grains. Once cut, or with only crop residue remaining, it is difficult to impossible to tell the difference between irrigated and non-irrigated grain. In these cases we relied on our satellite imagery interpretation unless there was evidence in the field that irrigation of the crop or stubble had occurred.

Additional review of North Snake reduction acres irrigated with surface water during 2005

The NSGWD sought reduction credit for acres on which ground water was not diverted, but irrigation continued from a surface water source. These acres were disqualified first-hand from the reduction list, because most were under commingled systems where the proposed reduction was to withhold use of supplemental ground water under only a portion of the distribution system, although all acres under the system remained irrigated. There are a number of problems with the concept of partial reductions under commingled systems, including but not necessarily limited to:

- Unless the acres proposed for reduction were physically isolated from the ground water source, or completely dried up, there could be no confirmation that ground water was not used on those acres.
- Even if reduction acres were physically isolated from the ground water source, there is little that would prevent the water user from using more of the available surface water supply on the reduction acres, and additional ground water on remaining acres, causing no actual reduction in use.
- Partial credit under these scenarios might be available based upon historic diversion volume. This is not possible for many systems because there are not sufficient PCC measurements or flow meter or hour meter data from those systems to establish a reliable water use baseline.
- Even with current PCC measurements, power consumption data are not received until January or February, and final determinations of ground water use cannot be made until then.

I reviewed the spreadsheet data with regard to NSGWD reduction acres disqualified due to supplemental use status and continued 2005 irrigation. I investigated existing WMIS measurement and reporting data for each ground water diversion involved, and identified those systems that appeared to have either sufficient PCC information, or an adequate measuring device for 2005. To attempt a partial credit analysis for a PCC system, 2005 power data could be used, once available, to compare to baseline PCC volumes. Analysis on some PCC systems would also be dependent on an updated or confirmed PCC measurement. Systems using a measuring device had to have existing baseline data, unless the system was not to be used during 2005. In those cases a 30% credit might have been approvable. Only about one-third of the supplemental acres, or 972 acres, could be considered based on the above criteria.

Approximately 420 of the 972 acres are irrigated by four separate wells that the operators proposed would not be pumped in 2005. As these were straightforward plans, covering a large

number of acres, I conducted preliminary field investigations for those four diversions. PCC measurements for two of the wells investigated were found to be invalid due to new or additional pump loads on the system that were not included in any earlier PCC measurements. A third system, with a known invalid PCC, had a new hour meter installed for the 2005 season. There were hours recorded on the meter, confirming that the well had been in use. The fourth system was not accessible for examination. Nearly half the acres failed the supplemental review test. No additional analysis was attempted for the remaining 552 acres.

Consequently, no reduction credit is given to the 972 acres that are part of commingled systems that continue to be entirely irrigated with surface water, or a mix of ground and surface water¹.

Final Acreage Determinations

The NSGWD submitted a total of 8,562 acres for reduction credit. Review found 2,144 equivalent acres eligible for credit (idled supplemental acres received 30% partial credit). NSGWD acres found not eligible for reduction credit included:

- Acres that continued to be irrigated during 2005 from a surface water source.
- Acres found irrigated in 2005 with ground water.
- Acres already included for credit under conversion projects.

The Magic Valley GWD submitted a total of 12,542 acres for reduction credit. Review found 4,741 acres eligible for credit. MGVWD acres found not eligible for reduction credit included:

- Acres not irrigated in 2004 and not part of the 2004 MGVWD set-aside.
- Acres found irrigated in 2005 with ground water.
- Acres (mainly in pivot corners) not a part of appurtenant water rights.

In aggregate, a total of 21,104 acres were submitted by NSGWD and MGVWD for mitigation credit based on voluntary reduction in use of ground water for irrigation. A total of 6,885 acres, or 33% of submitted acres, were found eligible for mitigation credit based on the protocol outlined in this memo. A full distribution of acres by eligibility or non-eligibility code is attached (*Attachment A*).

Review of MGVWD 2004 Mitigation Acres

The Eastern Snake Plain Aquifer Mitigation, Recovery and Restoration Agreement for 2004, included ground water user commitments to curtail ground water diversions on up to 3,000 irrigated acres in the MGVWD. The status of MGVWD 2004 set-aside acres had not been previously evaluated, but was an additional product of the spreadsheets created for analysis of 2005 reductions. From the MGVWD 2004 set-aside database I confirmed that 2,258 idled acres were identified as a part of the 2004 mitigation plan. 2,117 of those acres were subsequently included on 2005 reduction plans. Review of 2004 set-aside acres was concurrent with review of 2005 reduction acres, except that criteria for 2004 set-aside eligibility were limited to non-irrigation during 2004 as indicated by satellite imagery, and inclusion on a valid water right. A total of 1,550 MGVWD 2004 mitigation plan acres were found to be qualified as idled during 2004. Review did not include about 140 acres not associated with 2005 plans. A summary of MGVWD 2004 set-aside acres is attached (*Attachment B*).

¹ Acres that are a part of a documented NSGWD conversion project where both ground and surface water deliveries are accurately measured, will be credited separately.

Problems Encountered During Review

IDWR staff expended a significant joint effort over the past summer to organize, interpret, review and verify mitigation plan data. Estimates of total time spent on this project exceed 1000 staff hours. We did expect to review and field verify all reduction acres, but IDWR and WD130 also researched and compiled general background information which should have been submitted by the ground water districts as a part of the plans.

The omissions and errors in the data received, particularly from MVGWD, include:

- Materials submitted by MVGWD on June 14 were so incomplete that they could not be fully reviewed; final maps and supporting information were not received until July 29.
- Packets of maps from both districts were received in random order.
- Many MVGWD maps were not labeled with names and/or clear or complete PLS locations.
- MVGWD water user acreage worksheets were hard to read and in some instances did not match maps.
- Electronic spreadsheets submitted by both ground water districts contained name or reference data entered in mixed format that could not be sorted alphabetically without correction.
- The MVGWD spreadsheet did not include the point of diversion numbers; I determined those and added them to the spreadsheet.
- Numerous mapped plans in the MVGWD submittal were not included on the spreadsheet; staff added those acres and all supporting information manually so that the plans could be reviewed.
- Valid water rights were not verified for MVGWD plan acres.

Conclusions

After review and verification of all submitted reduction acres, a total of 6,885 acres were identified as actually idled or qualified as idled for 2005, comprising 33% of the total submitted. Recent ground water model calculations indicate reach gain increases of 4.7 cfs in the Devil's Washbowl to Buhl reach, and 2.7 cfs² in the Buhl to Thousand Springs reach, attributable during 2005 to decreased depletions resulting from non-irrigation of these acres. These results do not include reach gains from NSGWD conversion projects, or reach gains attributable to 2004 diversion reductions.

² The 2.7 cfs reach gain for the Buhl to Thousand Springs reach is based on all of the verified reduction acres and is not limited to those within the Clear Springs Foods Snake River Farm call impact area.

Attachment A

Summary distribution of NSGWD and MVGWD reduction acres, by eligibility code

Eligibility Code	NSG Acres Submitted	NSG Acres Verified		MVG Acres Submitted	MVG Acres Verified		Total Acres Submitted	Total Acres Verified	
1	1176.5	1233.9		1485.1	1565.3		2661.7	2799.1	
2	1025.0	709.5		2183.6	1651.0		3208.6	2360.6	
3	807.9	200.5		42.9	10.5		850.8	211.0	
4	0.0	0.0		1777.3	1514.5		1777.3	1514.5	
<i>Total eligible</i>	3009.5	2143.9		5489.0	4741.3		8498.5	6885.2	
5	1110.4			4095.0			5205.5		
6	2863.0			540.9			3403.9		
7	174.5			556.0			730.5		
8	80.3			172.7			253.0		
9	691.2			809.5			1500.7		
10	271.6			879.1			1150.8		
11	361.6			0.0			361.6		
<i>Total not eligible</i>	5552.7			7053.2			12605.9		
Total submitted	8562.1	2143.9	25%	12542.2	4741.3	38%	21104.3	6885.2	33%

Eligibility Code Description

- 1 irrigated 2004, not irrigated 2005, number of acres as submitted or greater
- 2 irrigated 2004, not irrigated 2005, number of acres less than submitted
- 3 irrigated 2004, not irrigated 2005, ground water supplemental, 30% credit
- 4 not irrigated 2004, not irrigated 2005, enrolled in MVG 2004 set-aside
- 5 not irrigated 2004, not irrigated 2005, not eligible
- 6 irrigated 2005 with surface water, not part of a conversion project, not eligible
- 7 submitted acres not a part of a water right, not eligible
- 8 submitted acres under endguns or small parcels < 1 acre, not eligible
- 9 found irrigated with ground water 2005, not eligible
- 10 not mapped, duplicate entries, other problems, not eligible
- 11 also claimed under NSG conversion project, not eligible

Attachment B

Summary of MVGWD 2004 Mitigation Plan Acres

Number of 2004 Plan Acres	2258
Number of 2004 Acres submitted with 2005 reductions	2117
Number of Eligible 2004 acres	1550
Non-eligible Acres	567

Disqualification category distribution:

Review reductions	263
Irrigated 2004	58
Not part of water rights	193
No maps, other issues	53
Total	567

Acres not reviewed (not submitted with 2005 plans)	141
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