MEMORANDUM

DATE: January 13, 2006

TO: Karl Dreher

THROUGH: Tim Luke, Gary Spackman, Dave Tuthill

FROM: Cindy Yenter

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

A considerable portion of the 2005 mitigation plan submitted by the North Snake Ground Water District (NSGWD) and Magic Valley Ground Water District (MVGWD) was the conversion of acres previously irrigated with ground water, to systems which relied on or maximized the use of rental water delivered through canals and laterals owned by the North Side Canal Company (NSCC). These projects are located exclusively within the NSGWD boundaries, usually within a few miles of the canyon rim. Conversion project development began in 2002 and continued through 2005, with the goal of over 9,000 acres converted to surface water irrigation.

2005 Summary of Activity

NSGWD included a list of conversion projects which contained points of diversion, water right numbers, and number of acres receiving water from each project. NSGWD also noted which projects received NSCC shares, but did not specify the number of shares. The conversion project plans did not include maps or any other project specifications, and NSGWD did not have any field documentation on file. Our in-office review of these projects included the following steps:

- Review of water right information for all associated points of diversion, overlapping water rights, combined water right limits, and any reference to the use of the right(s) with NSCC shares or another surface water source.
- Review of ArcView NSCC layer showing locations of surface water deliveries to active shareholders. This layer is current as of 2 years ago.
- Search of WMIS data to verify pod numbers and review existing delivery system information, including PCC measurements, installed flow meters or time clocks, and power consumption or diversion trends since the project was developed.
- Identification of all associated wells and water rights which needed to be added to the conversion project listing.

Initial model runs for conversion acre mitigation credit were completed after in-office review only. The June 7, 2005 Order Regarding IGWA Replacement Plan, granted a preliminary mitigation credit of 5.3 cfs for reduction in ground water depletions as a result of conversion projects. The July 6, 2005 Order Approving IGWA Substitute Curtailment Plan included a recalculated conversion credit of 8.5 cfs based on additional information submitted by NSGWD. Conversion credit was dependant upon a requirement that all wells that supplied irrigation water to conversion acres be disabled or otherwise controlled during 2005 so that no ground water could be diverted to conversion acres. Full credit was given only to those acres formerly

irrigated entirely with ground water rights, which are now fully irrigated with surface water. Acres formerly irrigated with a mix of ground and surface water were given credit at a rate of 30% of total acres, in order to limit replacement credits to the average actual historical depletion of ground water.

NSGWD objected to the order to disable conversion project wells, citing delivery constraints within the NSCC system. I confirmed with NSCC that deliveries of NSCC shares would take precedent over deliveries of rental water, should demands for delivery become too high. NSCC informed NSGWD and some conversion project operators that rental water deliveries could not be guaranteed or that timing of rental deliveries might be sporadic. Most water users felt they should be able to use their wells in order to insure their crops. The July 6, 2005 Order also modified the conversion project well curtailment requirement to allow waivers for use in the event of a shortage of surface water, if an appropriate measuring device was installed.

WD130 staff conducted field inventories of conversion projects beginning in early June 2005, to locate and identify the wells, ponds, associated wells and acres served by the conversion projects. Staff also made an analysis of the pumping systems and a determination of the required ground water measurement method at each diversion. During inventory we identified 41 active conversion projects[1], involving 61 wells. Twenty-four (24) of the 61 ground water systems had been modified during conversion so that existing PCC measurements were no longer valid. Alternate measuring devices were installed on only a handful of these diversions. The remaining diversions had existing devices, or could continue to use the PCC measurement method.

On July 25, 2005, I sent letters to the operators of 17 wells, requiring the installation of hour meters or in-line flow meters if the wells were to be used during 2005. On July 29, 2005, IDWR received a packet of Joint Requests to Allow Continued Use of Ground Water, signed by NSGWD and water users, requesting continued irrigation from a total of 39 conversion project wells. Each Joint Request reflected my measuring device requirements where necessary. Because my letters did not go out until late July, however, I ended up being forced to compromise with the installation of hour meters on some systems, as flow meters could not have been installed without disrupting operation of the well during the irrigation season. These wells will be required to install in-line meters prior to the 2006 irrigation season, if diversions are anticipated.

In mid-October, I began collecting device data from conversion project wells. Eight of about 17 systems I checked had been operated. On November 4, 2005, I sent a letter to the NSGWD seeking NSCC rental water delivery data to conversion projects, and early power consumption records for selected conversion project wells *(copy attached)*. I received an electronic spreadsheet from NSGWD on December 15 which contained a schedule of NSCC rental delivery amounts by project, and most of the power consumption data I had requested, plus measuring device data from conversion project wells that NSGWD was able to collect. Some device data were in addition to what I had collected and some confirmed my readings. I received follow-up copies of some, but not all, IPCO documentation on December 18. The collective ground water diversion data were used to confirm non-use of wells and to estimate diversions from those wells which had been operated during 2005.

[1] Five (5) conversion projects on the initial list will not be completed

Analysis

In my spreadsheet entitled "NSGWD Conversions 2005 FINAL.xls" I have summarized the conversion project 2005 research, field inspection results, and end-of-year data. End-of-year data include both the rental water deliveries associated with each pod location, and an estimate of actual ground water savings based on historical ground water diversions as compared to 2005 ground water diversions. Ground water savings are represented as an acreage reduction for 2005.

There were a number of anomolies in the conversion project data which prompted me to take a closer look at actual ground water savings:

- Eleven conversion projects reported no deliveries of rental water in 2005. Most of the associated wells were not operated in 2005, indicating a full supply of NSCC shares.
- Four projects received deliveries of rental water greatly in excess of the irrigation requirement for the project acres, in one case approaching 6 afa.
- More than ½ of the total project wells (35 wells) were found to be supplemental in nature.
- Total deliveries of rental water to conversion project field headgates is reported to be about 20,400 acre-feet[2]. This indicates a reduction in use on up to 8160 equivalent acres[3]. Acreage reductions representing actual ground water savings are about 5400 acres.
- Total deliveries of NSCC shares were not reported by NSGWD.
- Information about delivery locations and measuring devices for rental water is not complete, mostly because water users did not know where the water was being measured. WD130 staff did not have the time to contact NSCC and complete these investigations this year. It is unclear how this affects the accuracy of the NSCC data received.

The water savings analysis relied on identifying the limiting factor in the water use data, either the historical use of ground water or the amount of rental water received at field headgate during 2005. The following analysis matrix identifies the criteria used in determining and assigning equivalent reduction acres for each conversion project:

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[2] Total rental water purchased by IGWA during 2005 was approximately 40,000 acre-feet. The conversion delivery total of 20,400 AF does not include water delivered to Sandy Pipeline, or estimates of conveyance losses.

[3] For calculations of equivalent acres irrigated by conversion water, the average duty of water is assumed to be 2.5 acre-feet per acre (afa). This is slightly higher than the ET amount used to calculate depletions in the ground water model, but it includes a fraction for delivery losses.

Analysis Matrix for estimation of actual ground water savings on NSG conversion projects

cw = conversion water delivered in 2005, volume in acre-feet

gw = ground water diverted from project well or wells, volume in acre-feet

For all systems: If no historical data are available, but cw was delivered, credit is limited to 30% of total project acres or equivalent cw acres using a water duty of 2.5 afa, whichever is less. If no cw was delivered in 2005, no gw savings credit given.

	insufficient conversion water received	sufficient conversion water received	excess conversion water received
GW Primary			
Well operated	If sum of gw and cw results in 2005 water duty less than historical gw duty, calculate equivalent acre credit with cw vol, using historical gw duty	If sum of gw and cw results in 2005 water duty equal to or greater than historical gw duty but less than or equal to 4 afa, subtract gw vol from cw vol and calculate equivalent acre credit, using 2005 water duty	If sum of gw and cw vol results in 2005 water duty greater than 4 afa, calculate equivalent acres from 2005 gw diversions using historical gw duty, and subtract from total project or system acres
Well did not operate	If cw duty less than historical gw duty, calculate equivalent acres from cw using historical gw duty	If cw duty equal to or greater than historical duty, but less than 4 afa, credit for all acres	If cw duty greater than 4 afa, credit limited to total system acres
GW Supplemental			
Well operated	if historic gw diversions are equal to or less than 2005 gw diversions, there has been no reduction in use and no credit, regardless of the amount of cw delivered. If historic gw diversions are greater than 2005 gw diversions, and there was cw delivered, use the lesser of the following: 1) the difference between historic and 2005 gw volumes, divided by 2.5 afa, or 2) cw volume divided by 2.5 afa		
Well did not operate	if cw duty is less than historical gw duty, cw delivery is limit; if cw duty is greater than historical gw duty, historical gw diversions are limit. calculate equivalent acres from limiting vol using 2.5 afa[4]		

[4] The use of the 2.5 afa average water duty is uniform for calculation of equivalent acres under supplemental systems, because it is not possible to calculate the actual water duty of supplemental systems without knowledge of NSCC deliveries.

The matrix does not specifically address the occurance of multiple water rights or multiple wells participating in a single conversion project, or situations where one water right has been developed as a primary right and an overlapping right has been developed as a supplemental right. For each identified conversion project, I took a systems approach and identified all overlapping water rights and all points of diversion authorized for use on project acres and on related acres under the same distribution system. If any acres under the system had appurtenant supplemental ground water rights, the whole system was treated as a supplemental system. Therefore, in a system either entirely or partially served by a conversion project, where there were mixed-use water right scenarios or commingling of water supplies, an analysis of the total water available for irrigation in 2005 and the total water diverted historically, *for the entire system*, still yields a fairly reliable estimate of ground water reductions of use.

My ability to perform an in-depth analysis of ground water savings for each conversion project was possible because the 2005 diversion and power consumption data I received from NSGWD were fairly inclusive, and existing WMIS data for these diversions were more complete than I had expected. Data gaps do still exist, but a number of updated pcc measurements were made during 2004 on these diversions and those measurements were available for analysis.

Conclusion

A direct computation of mitigation credits based entirely on headgate deliveries of rental water may seem simple or straightforward, but analysis suggests otherwise. The 2005 distribution of rental water, particularly the excessive deliveries, is cause for concern. Excess deliveries could indicate expansions in use, waste or other mis-appropriation of surface water. Those acres receiving no rental water and still not requiring supplemental diversions of ground water probably have a full supply of NSCC shares that have not been used. Maximizing use of existing NSCC shares may be within the overall goal of the conversion projects, but it does not always result in actual water savings. To assume that the delivery of 20,400 acre-feet of rental water resulted in an equivalent amount of ground water savings may be misleading or inaccurate.

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November 4, 2005

NORTH SNAKE GROUND WATER DISTRICT
152 EAST MAIN ST
JEROME ID 83338

RE: Request for 2005 Delivery and Diversion Data for North Snake Ground Water District Conversion Projects

Dear Board Members:

Water District 130 and the Idaho Department of Water Resources (IDWR) are in the process of determining final mitigation credits for 2005 pursuant to the Ground Water Districts' Plan for Providing Replacement Water for the Blue Lakes and Clear Springs Foods delivery calls.

IDWR's Order Approving IGWA Substitute Curtailment Plan, dated July 6, 2005, required that the ground water district be responsible for measuring diversions of both ground water and surface water at conversion projects, and reporting those diversions to Water District 130. Although there was no specific deadline placed on this requirement, the sooner the data are received the sooner 2005 mitigation credits may be calculated and 2006 mitigation obligations determined.

At this time, I am requesting the submittal of all 2005 North Side Canal Company (NSCC) delivery data pertinent to all North Snake Ground Water District (NSGWD) conversion projects. Delivery records must show delivery amounts in either acre-feet, or in 24-hour second feet, to each project site. Please clearly identify the measurement unit used. If both rental water (or replacement water) and private shares have been delivered to the same project site, volumes must be shown separately, and the number of authorized private shares must be noted.

We will also be reviewing ground water diversion records to help determine mitigation credits for conversion projects. I am also making a request for power consumption data to be submitted for certain conversion wells *(see attached list)* in order to complete early analysis of 2005 withdrawals from those wells. Idaho Power data will not be received by IDWR until late January 2006, limiting our ability to analyze these diversions until then. Thirty-three (33) conversion wells are authorized to continue using the pcc method. Non-use must be verified for a few additional wells where measuring devices or hour meters were not installed. Full credit may be awarded to any conversion project where power consumption data confirm non-use of a conversion well. For the conversion wells shown on the attached list, please solicit individual power consumption records from each water user, in the form of copies of power bills for the entire irrigation season, or by report or print-out from Idaho Power Company. Please include all copies in your report.

There are 20 conversion wells using flow meters or hour meters for 2005 diversion records. I have collected preliminary data from most installed meters, and will be reading others in the coming weeks. The two Jerome Cheese wells had not yet begun to divert for fall mixing water on the date of my collections. Their hour meter data will be collected after November 15.

Preliminary data collection by Water District 130 does not relieve the owners of these 20 diversions of their obligation to report measurements to NSGWD by January 15, 2006.

Please submit all NSCC conversion project delivery data, and all individual power consumption records, to IDWR by December 1, 2005. If NSGWD has not yet received 2005 delivery data from NSCC, please notify me as soon as possible so that we can discuss a timeline and set a more realistic submittal date.

It would benefit both the Water District and the ground water users to know as early as possible, the mitigation credits received for 2005 as well as the ongoing mitigation obligations for 2006. If your data are received within the next month, IDWR should be able to make a determination of 2006 mitigation obligations shortly after the first of next year.

Thank you for your cooperation. Please let me know if you have any questions.

Regards,

Cindy Yenter

Cindy Yenter
Watermaster, Water District 130

cc: Ted Diehl, NSCC
Lynn Tominaga, IGWA
Orlo Maughan, MVGWD
Brian Higgs, NSGWD Hydrographer
Tim Luke, IDWR

November 4, 2005

North Snake Conversion Project Wells Needing Power Consumption Data Submitted for Confirmation of Non-use or Early Analysis of Supplemental Use

WMIS POD #	site_id	Owner	Meas. Method Required for 2005	Need 2005 Power Records?
100476	A0003561	Bettencourt, Luis	2	yes
100138	A0003558	Bettencourt, Luis	2	yes
100477	A0003559	Bettencourt, Luis	2	yes
100478	A0003560	Bettencourt, Luis	2	yes
100183	A0002560	Bolich, Rodney E. & Stanley D.	2	yes
100447	A0001497	Box Canyon Dairy	2	yes
100497	A0001698	Brandsma Dairy	2	yes
100468	A0001689	Connor, Keith A.	2	yes
100582	A0001662	De Kruyf Dairy	2	yes
NSG20040002		Dewit, Neil & Johnson Jr, Elmer	1	yes
100201	A0005531	Dewit, Neil & Melinda	2	yes
100524	A0001601	Dewit, Neil & Melinda	1	yes
100524	A0001601	Dewit, Neil & Melinda	1	yes
100554	A0001604	Dewit, Neil & Melinda	2	yes
100509	A0001221	Dimond, Gary B. & Ruth P.	1	yes
100644	A0001664	Henry Farms	2	yes
100891	A0001667	Henry Farms	2	yes
100480	A0001688	Hirai, Jack J. or Kunie	2	yes
100465	A0001632	Hubbard, Edward & Geneva	2	yes
101073	A0005586	Huettig Brothers	2	yes
100518	A0001615	Jerome Cheese/Davis Family Idaho	2	yes
100521	A0003401	Jerome Cheese/Davis Family Idaho	1	yes
100561	A0001633	Johnson, Jr., Elmer & Judy	1	yes
100541	A0003729	K & W Dairy	2	yes
100542	A0003553	K & W Dairy	2	yes
100544	A0003732	K & W Dairy	2	yes
100545	A0003728	K & W Dairy	2	yes
100546	A0003552	K & W Dairy	2	yes
100550	A0003727	K & W Dairy	2	yes
100159	A0003757	Richard Trail Trust	2	yes
100160	A0003758	Richard Trail Trust	2	yes
100161	A0003756	Richard Trail Trust	2	yes
100127	A0013703	Ruby, Kenneth E.	2	yes
100072	A0003466	Smith, Ronnie D.	2	yes
100074	A0003712	Smith, Ronnie D.	2	yes
100073	A0005538	Vader, Orval E.	2	yes
100070	A0001631	Veenstra, Frank	2	yes
100071	A0005536	Veenstra, Frank	2	yes
100078	A0001529	Veenstra, Frank/V & L Dairy	2	yes
100064	A0003467	Veenstra, Frank/Wellard, Larry	7	yes
100512	A0001693	Wert, Loren	1	yes