MEMORANDUM

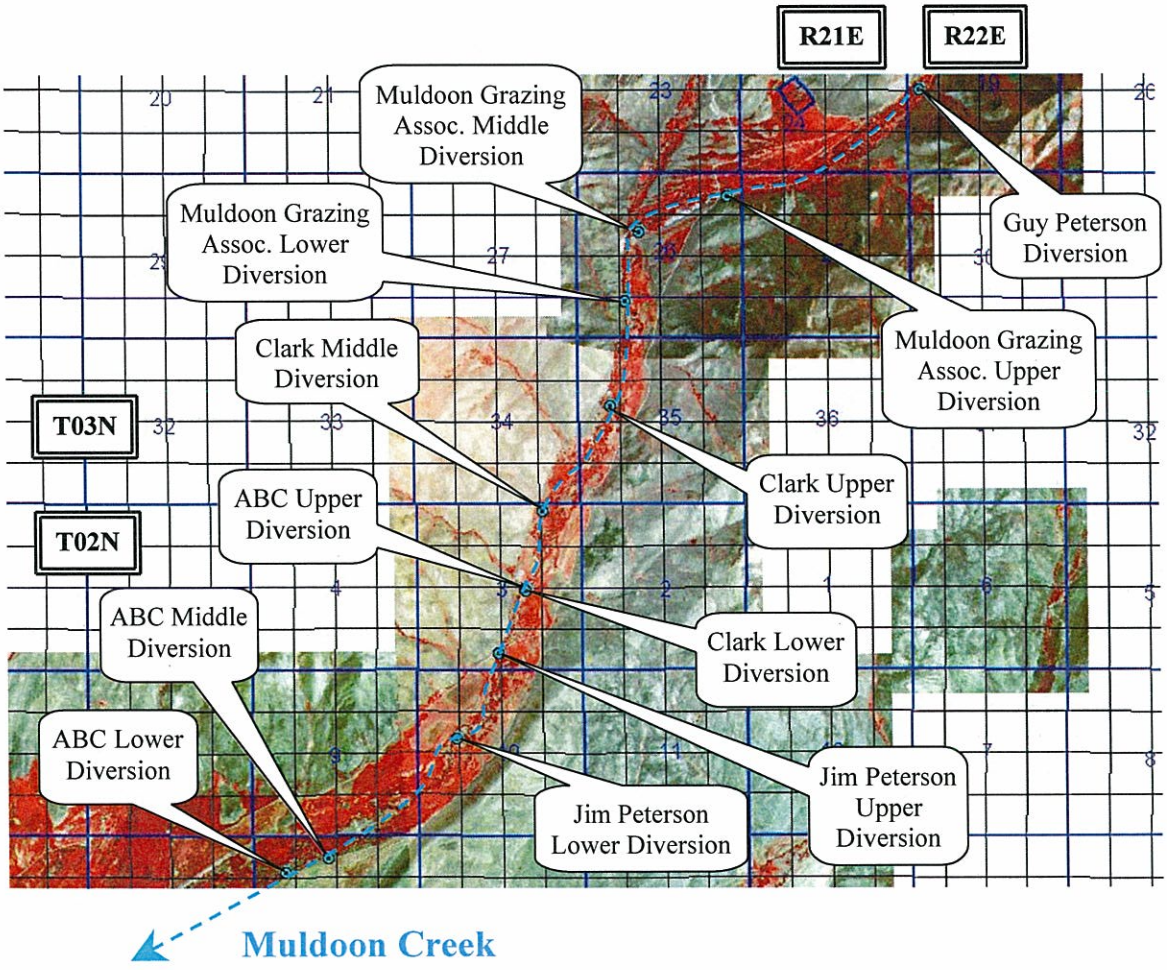
TO: Muldoon Creek Water District (37-O) File

FROM: Corey Skinner

DATE: August 3, 2007

SUBJECT: Field Visit

Monday, July 30th, Jeff Cooper and I traveled to Muldoon Creek to investigate several diversions related to an apparent complaint involving diversions of water from Muldoon Creek by Guy Peterson and available water to Muldoon Ranch Co (Arlen Crouch), previously ABC Agra. In previous years, similar types of complaints have been made. The Department issued an order in 2003 requiring installation of measuring devices and control works to the various water users on Muldoon Creek. In 2004, a detailed memo was prepared documenting the various diversions on Muldoon Creek relating to their degree(s) of compliance with the Department's 2003 order (see September 23, 2004 memo in Water District 37-O file). The following map was included as part of that particular memo, and is included in this memo for location reference (*note that the ABC Diversions are the Arlen Crouch diversions*)…



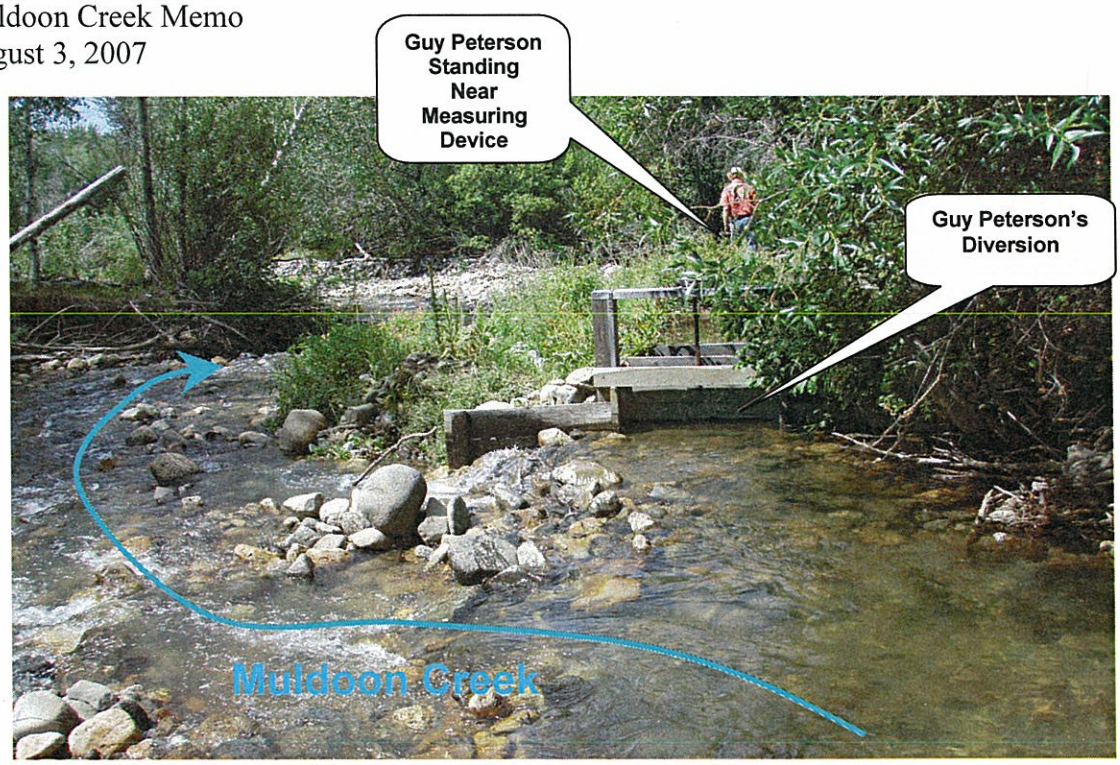
Upon arriving in the Muldoon Creek valley, Jeff and I stopped at Jim Peterson's (the Muldoon Creek water master) house. Guy Peterson was at the house also. Jeff and I, Jim Peterson, Jim Peterson's wife, and Guy Peterson proceeded to visit several diversions on Muldoon Creek.

A small amount of flow was observed to be flowing through Guy Peterson's diversion as shown in the following photo(s). The head over Guy Peterson's 3.0-foot Cipolletti weir varied from 0.02 to 0.05 feet, due to the weir plate not being entirely level. Note that a 0.05 foot head reading over a 3.0 foot Cipolletti weir is not even listed in the Cipolletti weir table in the Bureau of Reclamation water measurement manual. The lowest head reading in this particular table shows that a 0.20 head reading over a 3.0 foot Cipolletti weir corresponds to a flow of 0.903 cfs. A small amount of water (estimated at no more than what was flowing over the weir) was also observed flowing around &/or under the weir structure. It was noted that there were water stains on the weir structure indicating that higher flows had been diverted through the weir structure. The Petersons indicated that there was a recent thunderstorm higher up the Muldoon Creek Canyon that had washed water and debris down the stream. There was visible evidence in the area around the weir structure indicating that relatively recent higher creek flows had run around the structure.

After observing Guy Peterson's diversion, we then proceeded on down the Muldoon Creek Canyon. While driving by Guy Peterson's place, Jeff and I noted that more water in Guy Peterson's ditch than what was just observed flowing through his authorized diversion and measuring device. Jeff and I estimated that there was just over one cfs of flow through the ditch in the SESWNW of Section 24 (T03N, R21E). Note that this particular location is over a mile down the ditch from Guy Peterson's diversion, which was just observed to be diverting a rather minute amount of water.

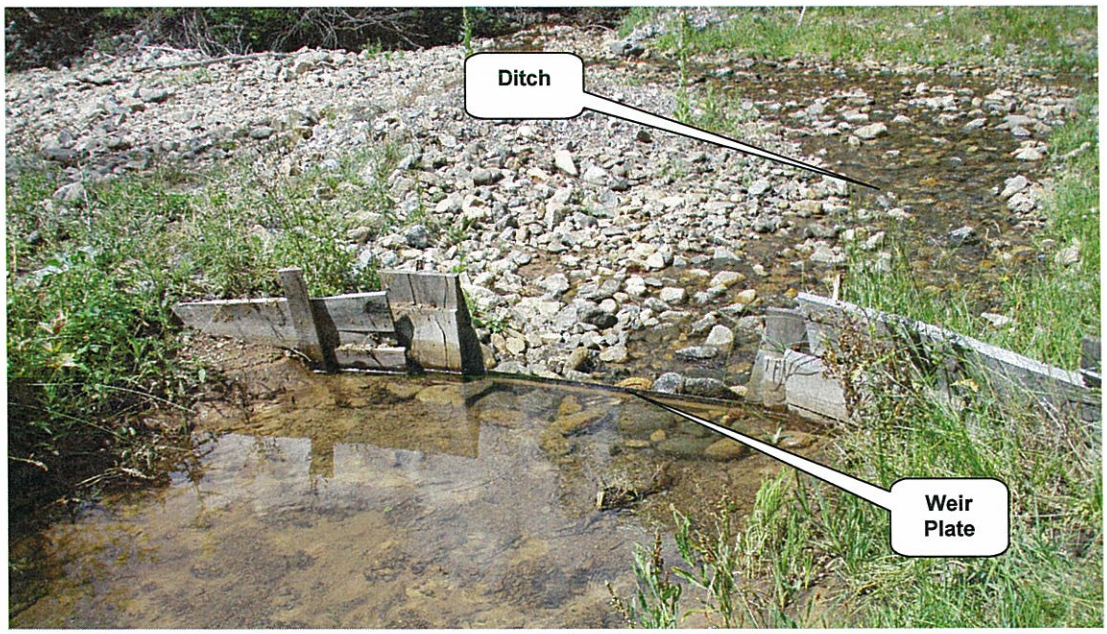
At the next stop to view another diversion, Guy Peterson indicated that there was some debris in the creek downstream of his diversion that might be contributing to the flow in his ditch. Later in the afternoon, after viewing other diversions, we returned to Guy Peterson's diversion and walked some distance downstream. It was observed that Muldoon Creek consisted of several braded channels with lots of cobble, woody debris, and dense vegetation growth downstream of Guy Peterson's diversion. It was observed that several streams were running the general direction of Guy Peterson's ditch below his diversion and his ditch could be considered a "gaining ditch". It was estimated that about 2.2 cfs was flowing through one particular section of his upper ditch. It was also noted that another lower ditch appeared to run across his pasture at a lower elevation contour than his upper ditch around his pasture. Note that this lower ditch was also conveying water from the Muldoon Creek Canyon bottom and is visible on the 2004 NAIP aerial photography.

The following photos document observations of Guy Peterson's diversion...



ABOVE: View of Guy Peterson's diversion. This is an authorized diversion for recommendation 37-1143 (2.8 cfs with 05/01/1910 priority) and recommendations 37-22107 and 37-22108 (totaling 1.88 cfs with 10/31/1966 priority).

BELOW: View looking downstream through Guy Peterson's measuring device. Note water stains on boards adjacent to weir indicating higher flows through measuring device in the past. Also note the relative amount of water in the ditch below the measuring device.



ABOVE: View looking upstream through Guy Peterson's measuring device (3.0 foot Cipolletti weir). The head over the weir varied from 0.02 to 0.05 feet, due to the weir plate not being entirely level

BELOW: View looking up Guy Peterson's ditch in the SESWNW of Section 24 (T03N, R21E) over one mile below his diversion. It was estimated that just over one cfs was flowing through this section of the ditch.

ABOVE: View looking up Guy Peterson's ditch in the NESE of Section 24 (T03N, R21E) over a quarter mile below his diversion. It was estimated that around 2.2 cfs was flowing through this section of the ditch.

BELOW: View looking up Muldoon Creek from the bridge crossing located in the NENE of Section 26 (T03N, R21E) approximately 1.4 miles below Guy Peterson's diversion.

During Monday's visit we also visited Muldoon Ranch Company's (Arlen Crouch's) middle diversion on Muldoon Creek located within the SENENW of Section 16 (T02N, R21E). It was observed that they were diverting all of the flow from Muldoon Creek at this particular location, so Muldoon Ranch Company's lower diversion was not visited. The head over Muldoon Ranch Company's 2.5-foot Cipolletti weir was measured at 0.42 feet. This would correspond to approximately 2.29 cfs of flow through the measuring device. However, it should be noted that the measuring device location on the ditch is approximately 0.2 mile downstream of the actual diversion from Muldoon Creek. It seems reasonable that some sort of loss in the ditch exists between the diversion point and the measuring point, so the actual diversion may be larger than what was measured. In addition, examination of the actual diversion point revealed that the diversion had no control works (lockable gate), which raises a question on whether or not the diversion is in compliance with the Department's 2003 order requiring the installation of control works and measuring devices on Muldoon Creek diversions.

Examination of the Department's SRBA recommendations reveals that the Muldoon Ranch Company's middle diversion is listed as a diversion on three recommendations, 37-1046C, 37-1142, and 37-2243A. Recommendation 37-1046C, with a priority date of 04/01/1885, allows for the diversion of 1.51 cfs of water from Muldoon Creek. However, note that the Muldoon Ranch Company's upper diversion point (NENWSE Section 3, T02N, R21E) is also listed as an authorized diversion point for this particular recommendation (no more than a total of 1.51 cfs can be diverted from both diversions under this recommendation). Recommendation 37-1142, with a priority date of 05/15/1910, allows for the diversion of 2.00 cfs of water from Muldoon Creek. However, note that the Muldoon Ranch Company's lower diversion point (SENWNW Section 16, T02N, R21E) is also listed as an authorized diversion point for this particular recommendation (no more than a total of 2.00 cfs can be diverted from both diversions under this recommendation). Recommendation 37-2243A, with a priority date of 08/08/1912, allows for the rediversion of wastewater from the Muldoon Creek channel from the Muldoon Ranch Company's upper, middle, and/or lower diversions. However, note that there may be issues with the actual point of diversion and point of injection, and perhaps the exact source of water, on this particular recommendation.

The following photos document observations relating to Muldoon Ranch Company's middle diversion ...

LEFT: View of the Muldoon Ranch Company's middle diversion showing all of the flow in Muldoon Creek being diverted through this diversion. Also note that the head gate structure is not installed and that the actual diversion is uncontrolled.

BELOW: View looking downstream through the Muldoon Ranch Company's middle diversion ditch showing the uncontrolled diversion.

ABOVE: View of the measuring device (2.5 foot Cipolletti weir) on the Muldoon Ranch Company's middle diversion ditch. The head over the weir was measured at 0.42 feet, which would correspond to 2.29 cfs of flow. However, note that this device is located approximately 0.20 mile downstream of the Muldoon Ranch Company's middle diversion on Muldoon Creek.

We also visited Muldoon Ranch Company's (Arlen Crouch's) upper diversion on Muldoon Creek located within the NENWSE Section 3, T02N, R21E. The head over Muldoon Ranch Company's two 3.5-foot rectangular weirs was measured at 0.30 feet. This would correspond to approximately 3.8 cfs of flow through the measuring device. Examination of the diversion works at this location revealed that there is still an uncontrolled channel from Muldoon Creek leading to the Muldoon Ranch Company's upper diversion ditch (*see page 10 of 9/23/2004 inspection memo in IDWR files for photos of this location*). This raises a question on whether or not the diversion is in compliance with the Department's 2003 order requiring the installation of control works and measuring devices on Muldoon Creek diversions.

The following photos document observations relating to Muldoon Ranch Company's upper diversion …

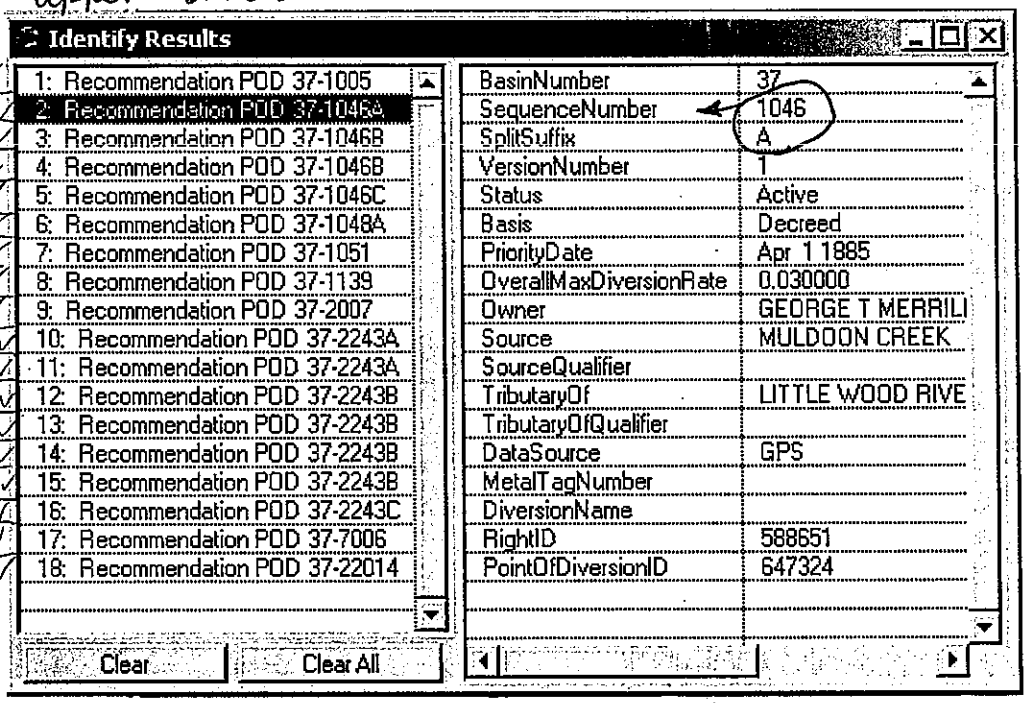
ABOVE: View of the measuring device (two 3.5 foot rectangular weirs) on the Muldoon Ranch Company's upper diversion ditch. The head over the weirs was measured at 0.30 feet, which would correspond to approximately 3.8 cfs of flow. Department records show 13 different recommendations, in the names of various parties with priority dates ranging from 4/1/1884 to 12/18/1967, that list the Muldoon Ranch Company's upper diversion as an authorized diversion.

BELOW: View looking up Muldoon Creek showing the flow in the creek directly downstream of the Muldoon Ranch Company's upper diversion.

During Monday's visit we also visited Jim Peterson's upper diversion on Muldoon Creek located within the SESESW of Section 3 (T02N, R21E). Jim Peterson has two diversion points from Muldoon Creek located between Muldoon Ranch Company's (Arlen Crouch's) upper and middle diversion points on Muldoon Creek. SRBA recommendations 37-99 (2.2 cfs with 04/01/1884 priority) and 37-1141 (2.2 cfs with 04/07/1884 priority) list both of Jim Peterson's diversions as authorized diversion points from Muldoon Creek. Jim Peterson indicated that he was taking all of his water out of his upper diversion, and was not taking any water out of his lower diversion. The head on the 1.0-foot Parshall flume that serves as the measuring device for Jim Peterson's upper diversion was measured at 1.0 foot, which would correspond to a flow of approximately 3.95 cfs. The following photo shows the flow through the measuring device on Jim Peterson's upper diversion ditch….

rights from
Crouch upper diversion

upper Diversion



4/1/1886 ABC ✓
4/1/1885 Merrill ✓
4/1/1885 Price ✓
Duplicate ✓
4/1/1885 ABC ✓
4/1/1884 ABC ✓
4/1/1885 ABC ✓
6/1/19[illegible] ABC ✓
8/28/1904 ABC ✓
Waste ABC ✓
Dup ✓
8/X/A12 Waste Price ✓
Dup ✓
Dup ✓
Dup ✓
Waste Merrill ✓
12/18/67 POD 193 ABC ✓
ABC ✓
4/15/1987

1.4 cfs
.03 cfs
.06 cfs
Duplicate
1.51 cfs
2 cfs
2 cfs
7 cfs
.8 cfs
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