New LRNRD - no Replacement

248 Wells - Active

32828 acres

after 2000 mean 139.7

57 - Inactive

6149 acres

mean 108 acres

Mike Thompson

From: Mike Thompson [MThompson@dnr.state.ne.us]
Sent: Friday, May 07, 2004 3:12 PM
To: Patterson, Roger
Subject: draft of possible allocation scheme for LRNRD

Roger,

The following could be used to assist the LRNRD in their planning process:

Our records show 38,977 acres for new wells drilled after 2000 (6,149 of these acres are shown as inactive) – you may have better numbers.=

For Illustration let's assume that 32,000 acres end up being part of your 330,000 certified acres. Therefore 298,000 of the certified acres would be considered pre-existing irrigated acres.

Our recent pumping target based on the 1998 to 2002 period is 242,289 AF. An additional 5% reduction would bring the target to 230,175 AF. If you wanted to reach the target by irrigating 80% of certified land and give new wells only half the allocation of the pre-2001 wells you could calculate it as follows:

80% of 298,000 acres = 238,400 acres
80% of 32,000 acres = 25,600 acres

Let X be the depth of application for the older wells in feet:

The formula to determine the full depth of application to achieve a pumping value of 230,175 AF would look like this:

238,400 X + 25,600 (0.5 X) = 230, 175

Simplifying:

238,400 X + 12,800 X = 230,175

251,200 X = 230,175

X = 0.916 Feet or 11 inches depth of application for "old" acres

Therefore, new acres would get a depth of application of 5.5 inches

To check the result, plug the depths back into the formula:

238,400 (11 / 12) + 25,600 (5.5 / 12) = 218,533 AF + 11,733 AF = 230,266 AF which is close to the target.

Therefore an allocation scheme using 12 inches for "old" acres and 6 inches for "new" acres would probably work.

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$X = 0.916$ Feet or 11 inches depth of application for "old" acres

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To check the result, plug the depths back into the formula:

$238{,}400\ (11 / 12) + 25{,}600\ (5.5 / 12) = 218{,}533$ AF + 11,733 AF = 230,266 AF which is close to the target.

As you can see if you added an inch to the "old" acres (i.e. 12 inches) allocation and half an inch to the "new" acres (i.e. 6 inches) allocation, you would be over the target by 21,025 AF.

Roger Patterson

To: Mike Clements (E-mail)
Subject: Post 2000 wells

Mike -

Hopefully the following will be useful if you decide to give the post 2000 wells a smaller allocation.

Our records show 38,977 acres for these wells (6,149 of these acres are shown as inactive) - you may have better numbers.

330,000 total − 32,000 new = 298,000 acres × 0.80 = 238,400 acres

For illustration let's assume that 32,000 of these acres end up being part of your 330,000 certified acres.

If we decided a 12 inch allocation on 80% of certified acres would hit the 1998-2002 pumping target of 242,289 AF and an additional 5% reduction was agreed to as the new target (230,175 AF), the post 2000 acres could be used to make this reduction. This would mean the pre 2000 acres would be allocated 12 inches on 80 % of certified acres and the post 2000 acres would get 6.3 inches on 80% of certified acres (12,114 AF/32,000x.8 Acres).

264,000 acres

wrong, this would be true if new lands not irrigated

Of course you could decide on a different allocation to the post 2000 acres and adjust the allocation to the pre 2000 wells or change the % of certified acres that receive an allocation accordingly.

Roger

By the way, would you like me to come to your Board meeting on Thur nite? I could probably get Cookson to come with me.

acre-inches acre-inches acre-inches

$$(298\,000 \times 0.80)12 + (32{,}000 \times 0.80)X = 230{,}175 \times 12$$

$$2{,}860{,}800 + 25{,}600X = 2{,}762{,}100$$

$$25{,}600X = -98{,}700$$

$$X = -3.86 \text{ inches for 80\% of new land}$$

330,000 Total Acres

old: 298,000 × 0.80 = 238,400 acres
new: 32,000 × 0.80 = 25,600 acres

} 264,000 acres is 80% of total

Target 230,175 af

$$238{,}400X + 25{,}600(0.5X) = 230{,}175$$

$$238{,}400X + 12{,}800X = 230{,}175$$

$$251{,}200X = 230{,}175$$

$$X = 0.916 \text{ feet} \quad (11 \text{ inches})$$

therefore new land would get 0.458 feet (5.5 inches)

$$238{,}400(0.916) + 25{,}600(0.458) =$$

$$218374.4 + 11{,}724.8 = 230{,}099 \text{ AF} \quad (76 \text{ AF under target})$$

1

add 1" to old add 0.5" to new

19867 + 1067 AF = 20,934 − 76 = 20858 over

Mike Thompson

From: Mike Thompson [MThompson@dnr.state.ne.us]
Sent: Friday, May 07, 2004 10:08 AM
To: Patterson, Roger
Subject: Wells Constructed after 2000 in LRNRD

Roger,

Here is what I get from our Registered Wells database:

Irrigation Wells Constructed after 2000 in LRNRD
None of these summaries used replacement wells.

Active Status New Well Count: 248
Acres Registered with DNR: 32828
Mean Acres per Well: 140

Inactive Status New Well Count: 57
Acres Registered with DNR: 6149
Mean Acres per Well: 108

Mike

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