Tri-Basin NRD

- Responsible for protecting soil and water resources of Gosper, Phelps and Kearney counties
- Governed by a 13-member board of directors
- District includes portions of Platte, Republican and Little Blue river basins
Groundwater-level Changes in Nebraska - Predevelopment to Spring 2014

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U.S. Bureau of Reclamation
Kansas-Nebraska Area Office

Nebraska Natural Resources Districts

Central Nebraska Public Power and Irrigation District

December 2014
Tri-Basin NRD Republican Basin Average Irrigation Pumping

- Overall Average
- Growing Season (Apr.-Sept.) Rain


- 2005: 11.8 inches
- 2006: 9.3 inches
- 2007: 7.13 inches
- 2008: 8.26 inches
- 2009: 8.36 inches
- 2010: 5.82 inches
- 2011: 7.57 inches
- 2012: 15.36 inches
- 2013: 14.25 inches
- 2014: 6.72 inches
Groundwater Quantity Management Area Rules and Regulations

Tri-Basin NRD Township Allocation

Phase 1 Phase 2 Phase 3 Community Highway

[Diagram showing the allocation of land phases and community areas]
TBNRD regulatory actions to protect groundwater quantity

• No increase in certified irrigated acres.
• New groundwater transfers (pumping GW onto other parcels) require NRD permits.
• Supplemental wells for surface water-irrigated fields permitted only if landowner agrees to retain surface water contract for life of well.
• Flowmeters required on all wells irrigating more than 14 acres (Rep. Basin only), new and conditional replacement wells district-wide.
TBNRD regulatory actions (continued)

• Groundwater levels are protected from declines below 1981-85 average levels.

• TBNRD has designated Elk Creek township Phase 2 and Union Township Phase 3 for groundwater quantity management.

• TBNRD has limited pumping in Union Township in Gosper County to 27” per acre over three years.
Integrated water resources management

- Managing groundwater to protect streamflows.
- Required by state law (LB 962-2004)
- Also required to help Nebraska meet requirements of interstate agreements (e.g., Republican River Compact)
Integrated water resources management (continued)

- Regulation is based on meeting requirements of joint integrated management plans (IMPs) in Platte and Republican basins.
TBNRD regulatory actions to protect streamflows

- All groundwater-irrigated acres must be certified.
- Transfers of certified irrigated acres are regulated.
- Transfers of certified irrigated acres are pro-rated if the destination field has a higher rate of stream depletion than the originating field.
- Increases in water use for large commercial and industrial uses are also regulated and must be offset.
- TBNRD agrees to offset depletions to streamflows resulting from groundwater pumping as part of our IMPs.
TBNRD Platte Basin IMP requirements

- TBNRD includes both overappropriated and fully appropriated portions of Platte basin.
- TBNRD IMP streamflow depletion reduction requirements to return to 1997 levels of depletions:
  - **OA Basin** (W of US Hwy. 183) 1775 a-f/Yr. by 2020
  - **FA Basin** (E of US Hwy. 183) 1760 a-f/Yr. by 2020
  - **Total** offset requirement= 3535 a-f/Yr. by 2020
TBNRD Republican Basin
IMP Requirements

• TBNRD needs to maintain positive balance between imported water and depletions to streamflows
• TBNRD maintains this balance in three ways:
  ▪ Maintain GW levels at or above 1981-85 levels
  ▪ Regulate irrigated crop production
  ▪ Augment streamflows
Tri-Basin depletion offset projects
Streamflow augmentation vs. Regulation

- Augmentation can be accomplished directly or indirectly.
- Direct augmentation=pumping water into a stream or releasing water from a reservoir.
- Indirect augmentation=diverting water into canals and reservoirs and allowing it to seep into the ground.
What are alternatives to augmentation?

• Pay farmers not to irrigate
  ▪ Needed reductions can be achieved by acquiring easements
  ▪ Easements can be acquired from willing sellers or by eminent domain (using condemnation enables targeting areas of greatest benefit)
  ▪ NRD would need to retire irrigation on at least 50,000 acres in Platte basin and 10,000 acres in Rep. Basin
  ▪ Cost=at least $4000/ acre, $24 million total
Elwood Reservoir
CNPPID High Flow Diversions

- TBNRD works with CNPPID to divert high Platte flows into canals, Elwood reservoir.
- Over 46,000 acre-feet diverted since first diversions in 2008.
- Over 36,000 creditable a-f at NRD cost of $8-$24 per a-f (DNR pays half cost).
- Diversions into Elwood Reservoir and E-65 Canal benefit both Platte and Republican Basins.
J-2 Reservoirs
J-2 Reservoirs

• Partner in J-2 reservoirs project.
• NRD cost =$1,571,661 over three years.
• 2000 creditable a-f per year.
• 50 year agreement.
• Cost=$15 per creditable acre-foot.
North Dry Creek Streamflow Augmentation Project
North Dry Creek Streamflow Augmentation Project

• TBNRD developed first streamflow augmentation well project in Nebraska.
• Located on North Dry Creek (Platte Trib. Near Kearney).
• First well completed in 2011, second well in 2014.
• DNR paid 50% of cost.
• Anticipate $11-12 per creditable a-f cost.

- Current plan is to drill two pumping wells which will be located along Turkey Creek in Gosper County.
- Each well will be accompanied by at least one observation well.
- First observation well will be drilled this spring.
- First production well will be drilled next winter (2015-16).

• A second production well is planned for 2019.
• Expected pumping rate is 1200 gpm per well.
• Expected output is 1000 acre-feet per well per year.
• Pumped water will be replaced by recharge into Elwood reservoir and E-65 canal.
• Most pumping will occur during spring and fall.
• NRD will assist with maintaining Turkey Creek in immediate vicinity of wells.
Spring and Turkey Creek Watersheds

Turkey Creek Watershed
51326 Acres
Spring Creek Watershed
31939 Acres
EQIP Special Initiative
USDA-EQIP Special Initiative

• Worked with USDA-NRCS on EQIP Special initiative to convert center pivot corners to grass, habitat (5-year contracts) starting in 2008.

• Total of 28 contracts (364 acres) enrolled.

• Created good upland game habitat.

• Not very effective as offset project (45 creditable a-f per year) because most corners enrolled were in low-depletion areas.