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Nebraska Department of Natural Resources Preliminary Republican River Basin Forecast for 2018

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Jesse Bradley, Kari Burgert, Carol Flaute, Brian Harmon
Nebraska Department of Natural Resources

Topic Outline

- Forecast 2016-2017 Projection with Management Actions
 - Preliminary 2016 and 2017 Accounting Results
 - Early Dry-year Forecast (2018)
 - Compact Call Year Evaluation Flow Chart
 - Forecasted NRD Projections for 2018
 - Kansas Compliance Water Request Update
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Preliminary Accounting Results (2016-2017)

Forecast 2016-2017 Projection (issued Dec. 2016) with Management Actions

	LRNRD	MRNRD	URNRD	Total
2016 Balance (Provisional)	5,700	-400	-900	4,400
2017 Balance (Forecast)	-12,800	-10,800	-17,800	-41,400
2-Year Balance (from Forecast)	-7,100	-11,200	-18,700	-37,000
2017 Management Actions	3,800	7,300	10,100	21,200
2017 Balance with NRD Management Actions	-9,000	-3,500	-7,700	-20,200
2-Year Balance (with management actions)	-3,300	-3,900	-8,600	-15,800

- *Units are acre-feet unless otherwise noted.
- **All values rounded to nearest 100. Sum of subtotals may not equal totals due to rounding.

2015-2016 RCCV Distribution (from Forecast issued Dec. 2016)

	LRNRD	MRNRD	URNRD	Total
2015 Balance	-9,900	-4,200	300	-13,700
2016 Balance (Provisional)	5,800	-400	-900	4,400
Remaining Compact Compliance Volume Accumulated in 2016	-4,100	-4,600	-600	-9,300

Final 2016 Accounting

Total Actual Compact Balance without NRD actions or RCCV Credit				-27,300
	LRNRD	MRNRD	URNRD	Total
Actual GW Depletion	49,000	56,300	83,500	188,800
Distribution Percentage	25.9%	29.8%	44.2%	100.0%
Balance by NRD (no action)	-7,100	-8,100	-12,100	-27,300
Total Management Actions	12,100	8,300	12,300	32,600
Remaining Compact Compliance Volume	4,100	4,600	600	9,300
2016 Balance	9,100	4,800	800	14,700

Preliminary 2017 Accounting

Year	Item	Information Source
Provisional Data for T=0 (Current Year or Immediate Past Irrigation Season)	Pumping	2016 Pumping
	Surface Water Use	Estimated from preliminary data and previous years values
	Streamflow	Available provisional records – end-of-year estimated
	Evaporation	2016 records and provisional data

Preliminary 2017 Accounting – Guide Rock

Total Accounting Balance without NRD actions				2,500
	LRNRD	MRNRD	URNRD	Total
Actual GW Depletion	49,700	55,900	79,700	185,200
Distribution Percentage	26.8%	30.2%	43.0%	100.0%
Balance by NRD (no action)	700	700	1,100	2,500
Total Management Actions	3,800	7,300	10,100	21,200
2017 Balance	4,500	8,000	11,100	23,600

Current Projection: 2016-2017 Balance at Guide Rock with Management Actions

	LRNRD	MRNRD	URNRD	Total
2016 Balance (final)	7,400	2,900	4,300	14,700
2017 Balance (projected)	4,500	8,000	11,100	23,600
2016-2017 Balance (projected)	11,900	10,900	15,500	38,300
Remaining Compact Compliance Volume (RCCV)	-4,100	-4,600	-600	-9,300

Current Projection: 2013-2017 Balance at Hardy with Management Actions

	Total
2013-2016 Balance (final)	90,000
2017 Balance (projected)	31,300
2013-2017 Balance (projected)	121,300
Remaining Compact Compliance Volume (RCCV)	-9,300

Early Dry-Year Forecast (2018)

Dry-Year Forecast

Year	Item	Information Source
Forecast Year T+1 (Coming Irrigation Season)	Groundwater Consumptive Use and Imported Water Supply Credit	Average Values for T=0 and T-1
	Surface Water Consumptive Use	Colorado: Average of T-1 and T-2 use Kansas: $+(0.1858 \times \text{HCLcontent}) + 9,575$ Nebraska: $-(4 \times 10^{-7}) \times (\text{NE lake volume})^2 + 0.52 \times \text{NElakeVolume} - 42,000$
	Streamflow	$(5\text{-year average of state line flows}) \times 0.41 + 0.23 \times \text{HCLcontent} - 27,450$

Compliance Balances

Year	Guide Rock Balance (AF)
T=0 (2017, projected)	23,600
T=+1 (2018, early forecast)	-37,800
2-Year Forecast Balance	-14,200

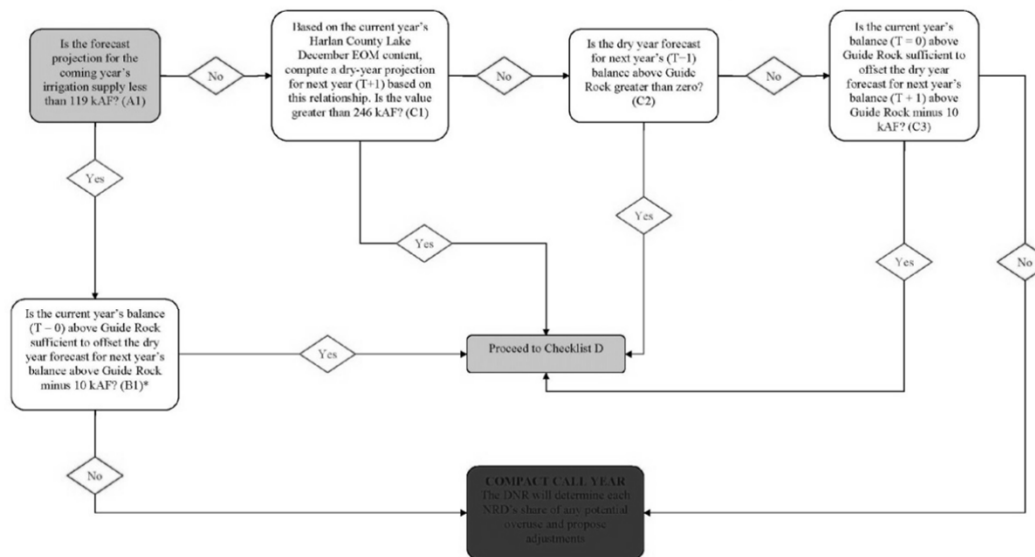
Year	Hardy Balance (AF)
T=-3 to 0 (2014-2017, projected)	109,500
T=+1 (2018, early forecast)	-32,400
5-Year Forecast Balance	77,100

Compact Call Year Evaluation: Checklist A.

Is the forecast projection for the coming year's irrigation supply less than 119 kAF?

YES
Proceed to Checklist B.

Republican River Water Supply Evaluation and Required Actions
Water Short Year Administration—Checklists A, B, and C

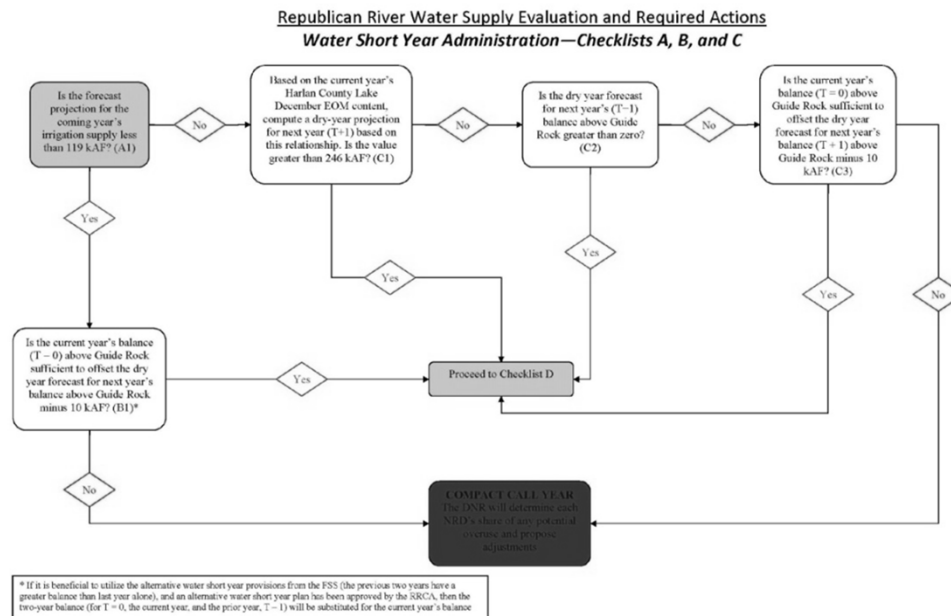


* If it is beneficial to utilize the alternative water short year provisions from the FSS (the previous two years have a greater balance than last year alone), and an alternative water short year plan has been approved by the SRCA, then the two-year balance (for T = 0, the current year, and the prior year, T - 1) will be substituted for the current year's balance

Compact Call Year Evaluation: Checklist B.

Is the current year's balance (T=0) above Guide Rock sufficient to offset the dry year forecast for next year's balance above Guide Rock?

NO – Compact Call Year is Forecast.



NRD-Specific Forecast Balances

NRD Annual Guide Rock Balance Forecast for Upcoming Year (2018)

	LRNRD	MRNRD	URNRD	Total
Allowable Depletion Distribution Percentage from IMPs	24.5%	31.1%	44.4%	100.0%
Allowable Groundwater Depletions	36,600	46,400	66,300	149,000
Projected Groundwater Depletions	49,300	56,100	81,600	187,000
2018 Forecast Balance (no action)	-12,800	-9,700	-15,300	-37,800
Current Year (2017) Balance	4,500	8,000	11,100	23,600
Total Forecast by NRD	-8,300	-1,700	-4,200	-14,200

Projected Obligations for Upcoming Year (2018)

	LRNRD	MRNRD	URNRD	Total
2017-2018 Balance (Forecast)	-8,300	-1,700	-4,200	-14,200
Remaining Compact Compliance Volume	-4,100	-4,600	-600	-9,300
Total Forecast Obligation	-12,400	-6,300	-4,800	-23,500

Summary

- Based on the preliminary forecast, the IMP checklist indicates that a Compact Call Year will be in place in 2018
- Preliminary approximate 2017 accounting balances:
 - Guide Rock: 23,600 ac-ft
 - Hardy: 31,300 ac-ft
- Preliminary dry-year forecast balance for 2018 currently approximated at -37,800 ac-ft at Guide Rock (-32,400 ac-ft at Hardy)
- Total projected shortfall including Remaining Compact Compliance Volume for 2017-2018 of approximately -23,500 ac-ft
- Kansas did not request any water for delivery by June 1, 2018

Next Steps

- The Department will complete its final forecast prior to January 1, 2018
 - Department will issue Compact Call Year order
 - NRDs will identify means to address potential Compact shortfall, but no actions will be required prior to October 1, 2018
 - Department will monitor water-short trigger
 - Department will reassess the necessity for management action late summer/post-irrigation 2018

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301 Centennial
Mall South
4th Floor
PO Box 94676
Lincoln, NE
68509-4676

402-471-2363