BEFORE THE ENVIRONMENTAL QUALITY COUNCIL
STATE OF WYOMING

IN THE MATTER OF THE APPEAL OF JOHN D. KOLTISKA, AC RANCH, INC. A Wyoming Corporation, PRAIRIE DOG RANCH, INC., a Wyoming Statutory Close Corporation, and PRAIRIE DOG WATER SUPPLY COMPANY, FROM WYPDES PERMIT NO. WY0054364	)))))))	Docket No. 09-3805

RESPONDENTS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

At the conclusion of the hearing in this matter on November 18, 2009, the Environmental Quality Council (EQC) directed the Respondents to submit proposed findings of fact and conclusions of law to Petitioners for their review and comment on or before January 11, 2010. Pursuant to the EQC's directive, Respondents Wyoming Department of Environmental Quality (DEQ) and Pennaco Energy, Inc. (Pennaco) jointly submit the following RESPONDENTS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW in the above-captioned contested case.

PROPOSED FINDINGS OF FACT

1. Petitioners are appealing only the April 2009 Major Modification of WYPDES Permit WY0054364 (Modified Permit). Am. Pet.¶2.

2. DEQ issued Modified Permit WY0054364 to Pennaco on April 29, 2009 (header date 02-13-2009) for discharges of up to 1.47 million gallons per day (mgd) of treated coal bed methane (CBM) produced water from the "Adams Ranch Treatment Facility" directly to Prairie Dog Creek (via outfall 003) and to the on-channel Paul #3 reservoir in Wildcat Creek (via outfall 002) in Sheridan County, Wyoming. Tr. 377; Exhibit 1 (SOB, p.1; Mod, p.1).

3. The Modified Permit authorizes only two outfalls: 002 for discharge to Paul #3 reservoir in Wildcat Creek and 003 for direct discharge to Prairie Dog Creek. Exhibit 1 (SOB, p.2; Mod, p.2); Exhibit 14 (Petrs' Resp 2nd RFA#1).

4. Wildcat Creek is a small tributary to Prairie Dog Creek. Wildcat Creek has ephemeral flows in its headwaters with waters characterized by moderate levels of salinity (EC 2,000 to 3,000 µmhos/cm). 9 Mile Ditch is a man-made irrigation ditch that some of the Petitioners use to convey irrigation water from Prairie Dog Creek into Wildcat Creek, and the water quality characteristics of the lower Wildcat Creek basin are strongly dominated by these diversions. Exhibit 31 (p. 5).

5. Outfall 002 is located near the end of the treatment unit and approximately two stream miles above the uppermost 9 Mile Ditch *outlet* to Wildcat Creek. Tr. 246-247; Exhibit 32.

6. Outfall 003 to Prairie Dog Creek is located downstream from the *intake* of the 9 Mile Ditch from Prairie Dog Creek, so discharges from outfall 003 do not affect irrigation in Wildcat Creek. Tr. 236-237; Exhibit 32.

7. The Modified Permit authorizes piping of only treated effluent from the treatment unit to outfall 002 for discharge into the existing on-channel Paul #3 reservoir in Wildcat Creek. Tr. 377; Exhibit 1 (SOB, p.2; Mod, p. 1); Exhibit 14 (Petrs' Resp 2nd RFA #1).

8. The Modified Permit requires that discharges of treated effluent via outfall 002 into the on-channel Paul #3 reservoir in Wildcat Creek be contained in the reservoir during "dry" operating conditions and prohibits discharge (release) of effluent from the reservoir except when natural precipitation events cause the reservoir to overtop and spill. Tr. 34-35; Exhibit 1 (SOB, pp.1-2, 4; Mod, p.3).

9. Irrigation of crops is Petitioners' only agricultural use of water from Prairie Dog Creek and Wildcat Creek that they allege has a reasonable potential to be adversely impacted by discharges which meet the effluent limits for EC, SAR and dissolved sodium in the Modified Permit. Tr. 235; Am. Pet.¶3; Exhibit 14 (Petrs' Resp 1st RFA#2 & 1st Int#1 (RFA#5&#7)).

10. The only effect on water quality in Prairie Dog Creek and Wildcat Creek from CBM discharges meeting the effluent limits in the Modified Permit that concerns Petitioners involves irrigation of crops. Tr. 235.

11. The primary irrigated crop at issue here is alfalfa. Tr. 235. The Amended Permit was designed by DEQ to protect the most salt sensitive irrigated crops of alfalfa and pumpkins. Exhibit 1 (SOB, p. 6). No evidence was presented at the hearing on pumpkins or any Petitioner growing or irrigating pumpkins. Mr. Koltiska and his ranches plant a mix of orchardgrass with alfalfa. Tr. 214-215.

12. To protect water quality for irrigation use, the water quality parameters of concern for irrigation are salinity measured as electrical conductivity (EC) and sodicity measured as sodium adsorption ratio (SAR) or dissolved sodium (as a surrogate for SAR). Exhibit 1 (SOB, p. 5).

13. In issuing permits to discharge, DEQ has to translate the narrative standard in Chapter 1, Section 20 into numeric effluent limits.

14. To establish the "default" EC limit for outfall 002 on Wildcat Creek, DEQ used the USDA salt tolerance database soil salinity tables to determine a soil salinity to provide an adequate level of protection. The salt tolerance database provides soil EC thresholds at which 100% crop yields are achievable. In order to calculate an EC effluent limit, DEQ then divided the target soil salinity derived from the USDA database tables by

1.5 as recommended by *Agricultural Salinity and Drainage, Hanson, et al, 2006 edition.* Exhibit 1 (SOB, p. 6); Exhibit 7.

15. The USDA salt tolerance database soil salinity data tables used by DEQ to set "default" limits for EC is the best database available for that purpose. Tr. 388.

16. The soil salinity tables list recommended soil salinity thresholds for a variety of crops. Exhibit 7.

17. DEQ assumes that using 100% threshold numbers from the soil salinity tables to derive default limits will assure that the quality of water discharged will not negatively affect the production of crops irrigated with that water. Tr. 117; Exhibit 1 (SOB, p. 6); Exhibit 7.

18. DEQ does *not* assume that those default limits will assure 100% of potential yield, because irrigation water quality is not the only factor that can affect crop production. Tr. 77-78.

19. To derive "default" numeric limits for EC of water (ECw) available for irrigation, DEQ divides the soil salinity (ECe) from the salt tolerance database tables by 1.5. Exhibit 1 (SOB, p. 6); Exhibit 7.

20. The 1.5 conversion factor to convert soil ECe to water ECw is a reasonable and commonly used method. Tr. 360-361, 486-488.

21. The Modified Permit's effluent limit is 1330 µmhos/cm for ECw on treated effluent piped to outfall 002 for discharge into the Paul #3 reservoir in Wildcat Creek. Exhibit 1 (SOB pp.1-6, Mod p.3); Exhibit 14 (Petrs' Resp 2nd RFA#2).

22. DEQ used "default" numbers to set the numeric effluent limit for EC on discharges from outfall 002 into Paul #3 reservoir in Wildcat Creek. Tr. 102; Exhibit 1 (SOB, p.6).

23. DEQ used the USDA soil salinity data table to derive the default limit of 1330 µmhos/cm for ECw to protect irrigation of alfalfa and pumpkins in Wildcat Creek. Exhibit 1 (SOB, p.6); Exhibit 7.

24. 2000 µmhos/cm ECe for soil is protective for alfalfa. Tr. 300-301, 337-338, 487. DEQ determined that 2250 µmhos/cm ECe for soil is protective for pumpkins, Exhibit 1 (SOB, p. 6), and no evidence was offered to contradict this determination. 3000 µmhos/cm ECe for soil is protective for orchardgrass. Tr. 474, 484-486; Exhibit 34.

25. Drs. Hendrickx and Buchanan have suggested that soil ECe up to 4000 µmhos/cm for alfalfa are acceptable in Wyoming. Tr. 359; Exhibit 22 (Hendrickx & Buchanan Report, pp.6-8).

26. DEQ divided soil ECe (2000 µmhos/cm) by 1.5 to calculate the effluent limit for water ECw (1330 µmhos/cm) at outfall 002 to protect alfalfa in Wildcat Creek. Exhibit 1 (SOB, p.6); Exhibit 7. DEQ concluded that this effluent limit would also protect pumpkins grown in Wildcat Creek, Exhibit 1 (SOB, p. 6), and no evidence was offered to contradict this determination.

27. A default limit of 1330 µmhos/cm ECw is protective for alfalfa in Wildcat Creek. Tr. 484. This ECw limit is also protective of orchardgrass. Tr. 474, 484-486; Exhibit 34.

28. Since 1330 µmhos/cm for ECw (water) is protective for alfalfa and orchardgrass, then 1215 umhos/cm for ECw is also protective for alfalfa and orchardgrass. Tr. 474, 503

29. The Modified Permit authorizes direct discharge from the treatment unit via outfall 003 to Prairie Dog Creek. Tr. 40-41; Exhibit 1 (SOB, p.2); Exhibit 14 (Petrs' Resp 2nd RFA #1).

30. The Modified Permit's effluent limits are 1215 µmhos/cm for ECw and 300 mg/l for sodium on direct discharges of treated effluent to Prairie Dog Creek from outfall 003. Tr. 58, 68; Exhibit 1 (SOB, p.5; Mod, p.2).

31. The bases for the effluent limits on direct discharges to Prairie Dog Creek from outfall 003 are:

a. ECw 1215 µmhos/cm: average ambient ECw in Prairie Dog Creek calculated from samples collected at USGS gauging stations at Wakeley and Acme (located near the mouth of Prairie Dog Creek about 10 stream miles below Wakeley), Tr. 58-59; Exhibit 1 (SOB, p.5);

b. Dissolved sodium 300 mg/l: 349 mg/l dissolved sodium based on the target SAR of 5 at an EC of 1215 to meet the Hanson Chart relationship and correlation between USGS-measured dissolved sodium concentrations in Prairie Dog Creek and the target SAR, then Pennaco's voluntary reduction of dissolved sodium limit to 300 mg/l. Tr. 59-60, 71-72, 99, 128; Exhibit 1 (SOB, pp.5, 9 (Graph 1));

c. SAR (no limit at outfall 003): based on limit for dissolved sodium at outfall 003 in lieu of limit on SAR, Exhibit 1 (SOB, p.5).

32. Prairie Dog Creek, a tributary to the Tongue River, has regular base flows fed by diversion of flows from Piney Creek, which is a perennial stream. Tr. 39; 235, 247 Exhibit 1 (SOB, p.1).

33. Prairie Dog Creek is a perennial stream due to a trans-basin diversion of up to 120 cubic feet per second (cfs) from Piney Creek via Jenks Creek to the top of Prairie Dog Creek (above outfall 003). Tr. 52, 235, 247.

34. The Prairie Dog Water Supply Company (PDWSC) normally diverts 50-65 cfs from Piney Creek via Jenks Creek to Prairie Dog Creek above outfall 003. Tr. 248, 254.

35. The maximum total discharge of 1.47 mgd allowed under the Modified Permit equates to approximately 2.27 (less than 2 ½) cfs. Tr. 345.

36. CBM discharge with a sodium concentration up to the 300 mg/l effluent limit will not cause an adverse impact on soils or irrigated crops if the resultant sodium concentration of the combined (CBM & natural) waters is acceptable. Tr. 346, 494-499.

37. The proportion of Prairie Dog Creek water to CBM effluent discharge will determine the overall water quality (including sodium concentration) at any particular time. Tr. 383-384; Exhibit 26 (Vance Report, p.5).

38. Downstream mixing of CBM discharge with natural flow (in Prairie Dog Creek) will determine the quality of irrigation water. Tr. 348.

39. It takes 24 cfs to irrigate Petitioners' lands below outfall 003 in Prairie Dog Creek. A maximum CBM discharge of less than 2 ½ cfs would be at most 1/10 of the 24 cfs irrigation water. Tr. 255-256. Petitioners do not begin to divert water from Prairie Dog Creek in the spring for irrigation until the flow is about 5 cfs and keep adding to that diversion until the flow is enough for irrigation. Tr. 256-257.

40. If PDWSC normally diverts 50-65 cfs from Piney Creek via Jenks Creek to Prairie Dog Creek above outfall 003, then a maximum CBM discharge of less than 2 ½ cfs would be at most 1/20 of the irrigation water below outfall 003. Tr. 248, 254.

41. Dr. Vance was concerned about discharge limits allowing addition of sodium that will increase sodium *concentrations* in Prairie Dog Creek over background *concentrations*, rather than with mass salt load by itself. Tr. 346. Dr. Vance did not have knowledge of Prairie Dog Creek flow data, had not done a mixing analysis, and did not have an opinion on a protective flow to mix with the maximum permitted effluent from outfall 003. Tr. 343-345.

42. Pennaco's expert, Dr. Schafer, demonstrated through mass load modeling analyses, using Sheridan County Conservation District water quality and flow data for Prairie Dog Creek, that an EC limit of 1215 µmhos/cm for outfall 003 will not result in mixed CBM effluent and natural water exceeding 1330 µmhos/cm EC in reaches of Prairie Dog Creek naturally below 1330 µmhos/cm EC, will result in a reduction of EC in downstream reaches of Prairie Dog Creek naturally exceeding 1330 µmhos/cm EC. Tr. 489-494, Exhibits 31 (pp. 25-29), 35-37.

43. Pennaco's expert, Dr. Schafer, demonstrated that a sodium level of 300 mg/L is protective and meets Hanson Diagram EC/SAR ratios at any natural flow of 5 cfs or more in Prairie Dog Creek. Tr. 497-499, Exhibit 39. Dr. Schafer demonstrated that a natural flow of 5 cfs (the minimum irrigation flow) and a maximum permitted flow of 2.27 cfs would result in an EC of 935 and an SAR of 2.6. *Id.* Dr. Schafer also

demonstrated that at a harmonic mean flow (a statistical low flow measure) of 6.8 cfs in Prairie Dog Creek, a sodium limit of 518 mg/L is protective and meets Hanson Diagram EC/SAR ratios. Tr. 495-497; Exhibit 31 (pp. 20-21).

44. At outfall 003, the use of sodium as the effluent limit as opposed to SAR, which is a ratio, will lead to a more predictable effect on the downstream mixture of effluent in a perennial receiving water such as Prairie Dog Creek. Tr. 126-127, 482-483. A sodium limit at outfall 003 instead of an SAR limit is reasonable, appropriate and effectively controls SAR. Tr. 63, 482-483.

45. The bases for the Modified Permit's effluent limits on discharges from outfall 002 into the on-channel Paul #3 reservoir in Wildcat Creek are:

a. EC 1330 µmhos/cm: the USDA salt tolerance database soil salinity threshold of 2000 µmhos/cm ECe for alfalfa converts (using the 1.5 conversion factor) to a "default" limit of 1330 µmhos/cm ECw for alfalfa. Tr. 31-32; Exhibit 1 (SOB, pp.5-6);

b. SAR in lieu of end-of-pipe limit, requires containment in an on-channel reservoir rather than direct discharge and also tighter irrigation monitoring and a re-opener provision for SAR making the establishment of an end-of-pipe effluent limit for SAR at outfall 002 "automatic" under the specified conditions. Tr. 34-35, 119; Exhibit 1 (SOB, p.6; Mod, p.9).

46. Wildcat Creek is tributary to Prairie Dog Creek and also receives flows diverted from Prairie Dog Creek via the 9 Mile Ditch. Tr. 217-218; Exhibit 1 (SOB, p.6).

47. Wildcat Creek is an ephemeral stream that does not have a predictable base flow above the outlet from the 9 Mile Ditch. Tr. 218; Exhibit 1 (SOB, pp.1-6).

48. The only irrigation diversions relevant to this appeal are those downstream from outfall 003 in Prairie Dog Creek and downstream from outfall 002 in Wildcat Creek. Exhibit 14 (Petrs'Resp.1stInt.#5).

49. The 9 Mile Ditch diverts water from Prairie Dog Creek and carries it over to Wildcat Creek above the confluence of Wildcat Creek with Prairie Dog Creek. Tr. 235-236. Mr. Koltiska and his ranches obtain the majority of their irrigation water from the 9 Mile Ditch which is unaffected by outfall 003. Tr. 249-250.

50. The 9 Mile Ditch can divert up to 22 cfs. Tr. 236.

51. The 9 Mile Ditch is not affected by Pennaco's CBM discharges, because the intake for the 9 Mile Ditch in Prairie Dog Creek is above the point of CBM discharge (outfall 003) into Prairie Dog Creek. Tr. 236-237, 250.

52. Petitioners are not concerned about CBM discharges affecting water quality in the 9 Mile Ditch, because the point of CBM discharge (outfall 003) into Prairie Dog Creek is below the intake for the 9 Mile Ditch in Prairie Dog Creek. Tr. 236-237, 250.

53. PDWSC has approximately 90 members / shareholders. Tr. 238.

54. PDWSC shareholders are located mostly in Prairie Dog Creek. Tr. 237, 243-244.

55. Some PDWSC members irrigate with CBM water. Tr. 239.

56. Only 12 PDWSC members (including those who irrigate with CBM water) are located downstream from, and could be affected by, outfall 003 in Prairie Dog Creek. Tr. 237-238.

57. PDWSC shareholders irrigate with Prairie Dog Creek water below Wakeley and all the way down to Acme. Tr. 238-239.

58. Average ambient water quality between Wakeley and Acme should be comparable to ambient water quality available for irrigation use by the PDWSC shareholders who irrigate with Prairie Dog Creek water below Wakeley and all the way down to Acme. Tr. 238-239.

59. AC Ranch and Prairie Dog Ranch are cow-calf operations that raise hay for their own cattle and sell the surplus. Tr. 206; Exhibit 14 (Petrs' Resp 1st Int.#8).

60. Petitioners Prairie Dog Ranch, AC Ranch, and Mr. Koltiska use water from Prairie Dog Creek and/or Wildcat Creek to irrigate alfalfa and alfalfa/grass mix (orchard grass/timothy). Tr. 214; Exhibit 14 (Petrs' Resp 1st Int.#7).

61. Mr. Koltiska plants a mix of alfalfa and orchard grass at a 10:1 ratio of 20 pounds of alfalfa to 2 pounds of orchard grass. Tr. 214, 245-246.

62. Petitioners Prairie Dog Ranch, AC Ranch, and Mr. Koltiska do not flood irrigate. Exhibit 14 (Petrs' Resp 1st Int. #6).

63. All irrigation by Prairie Dog Ranch, AC Ranch, and Mr. Koltiska is done with sprinklers, by pumping water out of a small diversion reservoir. Tr. 216, 220-221.

64. Petitioners Prairie Dog Ranch, AC Ranch, and Mr. Koltiska use much of the alfalfa and alfalfa/grass mix they harvest for their own livestock, but do not record quantities. Exhibit 14 (Petrs' Resp 1st Int.#8).

65. Petitioners Prairie Dog Ranch, AC Ranch, and Mr. Koltiska have records of how much (surplus) hay they have sold, but they do not have records of the quantities of hay they have held back for their own cattle. Exhibit 14 (Petrs' Resp 1st Int.#8); Tr. 240-241.

66. Petitioners Prairie Dog Ranch's, AC Ranch's, and Mr. Koltiska's hay production (quantity) has fluctuated over the last several years due to temperature. Tr.242.

67. Mr. Koltiska has not noticed any difference in the performance of his alfalfa hay, and the quality (nutritional value) of his hay has stayed constant. Tr. 242.

68. Mr. Koltiska has not seen any impact from any untreated CBM water that may escape from the Paul #3 reservoir into Wildcat Creek, because he uses water from Wildcat Creek that includes water from 9 Mile Ditch. Tr. 218, 243-244, 249-250, 262-263, 376.

69. Petitioners do not have records of, and do not know, what crops are grown by other PSWSC shareholders. Exhibit 14 (Petrs' Resp 1st Int.#7).

70. Petitioners do not have records of quantities of crops harvested by individual PDWSC shareholders during the last 10 years. Tr. 244; Exhibit 14 (Petrs' Resp 1st Int.#8).

71. Mr. Koltiska has no knowledge of whether or not PDWSC members irrigating with CBM water have had any detrimental effects from it. Tr. 244. Mr. Adams, a rancher in Wildcat Creek, has produced irrigated alfalfa with untreated CBM water discharged into the Paul #3 reservoir pursuant to another discharge permit since 2006 and has not experienced any negative impacts to his alfalfa or soils. Tr. 576-577, 579.

72. Mr. Koltiska has irrigated with water out of Wildcat Creek upstream of 9 Mile Ditch at up to 2800 µmhos/cm ECw and has not yet seen any damage to his alfalfa from this water quality. Tr. 221, 266-268, 639.

73. The ambient ECw of Wildcat Creek water measured above the outlet from 9 Mile Ditch into Wildcat Creek is 2200 µmhos/cm (which is higher than the 1330 µmhos/cm ECw limit at outfall 002). Tr. 246.

74. There is very little water entering the Wildcat Creek system from below the Paul #3 reservoir down to the outlet from the 9 Mile Ditch. Tr. 381, 383.

75. Any water that does collect at the pumpback point below the Paul #3 reservoir is pumped out and over to the Makayla reservoir. Tr. 36, 40-41. DEQ assumed this water is coming from the Paul #3 reservoir although Dr. Schafer concluded the Paul #3 reservoir is not leaking into Wildcat Creek to include this pumpback point. Tr. 119-121, 503-505.

76. Based on carbon-13 and other isotope data gathered by Dr. Schafer in June 2009 (Exhibit 31, pp. 38-40), Dr. Vance, although not an isotope expert, calculated 16-17% CBM water at IMP-1, which is above the outlet from the 9 Mile Ditch. Dr. Vance concluded there was no trace of CBM water in Wildcat Creek below IMP-1 and above 9 Mile Ditch. Tr. 373, 375, 382; Exhibit 26 (Vance Report, p.5).

77. According to Dr. Vance, 60% of the water in Wildcat Creek at the pumpback point below Paul #3 reservoir and 83% at IMP-1 was non-CBM water, based solely on carbon-13 isotope data. Dr. Schafer concluded that all the water chemistry results from June 2009, including the carbon-13 analysis, showed no CBM influence at IMP-1. Dr.

Vance and Dr. Schafer agree that common ion chemistry from Wildcat Creek water samples taken in June 2009 show no evidence of CBM water anywhere in Wildcat Creek, to include IMP-1. Tr. 373, 383, 505-508; Exhibit 40.

78. Based on Dr. Vance's evaluation of Wildcat Creek water quality data, ECw increased to 2500 µmhos/cm and SAR decreased at IMP-1. Tr. 384-386.

79. Dr. Vance believes that the other (non-CBM) higher salt content water in Wildcat Creek that mixed with the 40% to 16% CBM water between the pumpback point below Paul #3 reservoir and downstream IMP-1 drove up the ECw to 2500 µmhos/cm at IMP-1. Tr.384-386.

80. Dr. Vance accounted for the increase in ECw (and decrease in SAR) as being due to mixing of CBM effluent with higher-EC non-CBM water in the Wildcat Creek system. Tr. 386.

81. The ECw level in Wildcat Creek could have gone up between the pumpback point below Paul 3 reservoir and IMP-1 even without CBM water mixed in, because more of the natural system could be contributing to the higher ECw at IMP-1, and the ECw at IMP-1 is lower than it is further down Wildcat Creek (because of mixing with the lower EC CBM water). Tr. 386-387.

82. There is no evidence of CBM water in Wildcat Creek below IMP-1. Tr. 168-170, 375-376. Even if there were such evidence, Dr. Schafer demonstrated that CBM water in upper Wildcat Creek could be coming from irrigation return flows and not the Paul #3 reservoir, that the amount of CBM water at the confluence of Wildcat Creek and 9 Mile Ditch would not be measurable, that CBM water from the Paul #3 would improve water quality in upper Wildcat Creek, and that CBM water would not have a measurable impact on irrigated crops. Tr. 509-514; Exhibit 41.

83. Dr. Vance's non-expert analysis of the carbon 13 data indicated that there has been some CBM water that has contributed to water quality in Wildcat Creek below Paul #3 reservoir, but such influence of CBM water would have been minor if discharge quality (100% CBM) was at most 1330 µmhos/cm ECw at outfall 002 to Paul #3 reservoir and CBM water was only 40% of the water at the pumpback point below Paul #3 and down to 16-17% of the water further down at IMP-1. Tr. 382-387.

84. Considering all the evidence on whether and how far the Paul #3 reservoir may be leaking into Wildcat Creek and considering the SAR monitoring provisions in the Modified Permit, DEQ's decision not to impose an SAR limit at outfall 002 was appropriate and reasonable.

85. The SAR and EC thresholds used by DEQ are protective of soil infiltration rates. Tr. 392-393; Exhibit 22 (Hendrickx & Buchanan Report, p.3).

86. The irrigated areas in the Prairie Dog Creek and Wildcat Creek drainages have good soils that are well-drained, have the greatest measured depth to groundwater that

NRCS measures, have a land capability class III among the best in Wyoming, and are mostly considered prime farmland by NRCS. Tr. 366-367, 487; Exhibit 29.

87. The content in the soils is not a concern to Dr. Schafer, and his work with the Prairie Dog Creek Agronomic Monitoring and Protection Program (AMPP) suggests the soils in the Prairie Dog Creek drainage are quite appropriate for irrigation. Tr. 487, 502-503; Exhibit 31 (pp. 5-12).

88. There is no consensus among the experts and scientists on what EC is protective for alfalfa. Tr. 348, 392-394, 638.

89. Petitioners do not allege what the numeric effluent limits should be. Tr. 638; Exhibit 14 (Petrs'Resp1st Int.#3).

90. Petitioners' expert, Dr. Vance, did not give an opinion on what the effluent limits in the Modified Permit should be to protect irrigation. Tr. 336-337, 338-339, 638.

91. Petitioners did not demonstrate how more restrictive effluent limits for EC, sodium or SAR would be more protective of irrigated crops or soils than the limits set in the Modified Permit. Tr. 638-639, 641.

92. There is more than one appropriate scientific method by which to set permit limits to achieve the narrative standard of Chapter 1, Section 20, of the Wyoming Water Quality Rules and Regulations. Tr. 479, 482, 641.

93. DEQ used appropriate scientific methods to set the challenged permit limits in the Modified Permit. Tr. 480-484; Exhibit 33, Exhibit 31 (p. 15).

94. The permit limits for outfall 003 in the Modified Permit are protective of soils and irrigated crops in the Prairie Dog Creek and Wildcat Creek drainages. Tr. 474-475, 484, 488-499; Exhibits 31 (pp. 20-29), 35-39.

95. The permit limits for outfall 002 in the Modified Permit are protective of soils and irrigated crops in the Prairie Dog Creek and Wildcat Creek drainages. Tr. 474-475, 502-514; Exhibits 31 (pp. 29-40), 32, 40, 41.

PROPOSED CONCLUSIONS OF LAW

1. Pursuant to WYO. STAT. ANN. § 35-11-112(a)(iv), the EQC has jurisdiction over the subject matter and the parties in this contested case.

2. WYO. STAT. ANN. § 35-11-301(a)(i) requires authorization under a permit issued by DEQ for the discharge of any pollution or wastes into the waters of the state. WYO. STAT. ANN. § 35-11-301(a)(i) & (ii) does not prohibit the discharge of pollution into surface waters of the state or the alteration of physical or chemical properties of waters of the state. WYO. STAT. ANN. § 35-11-301(a)(i) & (ii) requires a permit or authorization from DEQ/WQD to discharge pollution into surface waters of the state or to alter the

physical or chemical properties of waters of the state. A permit from DEQ/WQD is not required for discharges unless such discharges put pollution into surface waters of the state or alter the physical or chemical properties of waters of the state.

3. WYO. STAT. ANN. § 35-11-801(a) authorizes the DEQ to impose conditions on permits as necessary to accomplish the purpose of the Wyoming Environmental Quality Act which are "not inconsistent" with existing rules, regulations and standards.

4. Chapter 1, Section 20 of the Wyoming Water Quality Rules & Regulations (WWQRR) is a narrative standard to protect the quality of surface water used for agricultural purposes from degradation to such an extent as to cause a measurable decrease in crop or livestock production.

5. Crop and livestock production are the agricultural uses to be protected under Chapter 1, Section 20 of the WWQRR.

6. Chapter 1, Section 20 does not require there be no increase in EC or SAR levels over ambient water quality unless such levels will cause a measurable decrease in crop or livestock production. *See, e.g.*, Tr. 636, 638-639.

7. The burden of persuasion in this case is on the Petitioners. *See, e.g.*, Tr. 7. They did not meet that burden.

8. A preponderance of the evidence shows that the contested permit's effluent limits of 1215 µmhos/cm EC and 300 mg/l dissolved sodium for discharges from outfall 003 to Prairie Dog Creek and 1330 µmhos/cm EC with restrictions on SAR at the irrigation monitoring point (IMP) for discharges from outfall 002 into Paul #3 reservoir in Wildcat Creek to protect water quality for irrigation of alfalfa will not result in a measurable decrease in crop production and are consistent with the narrative standard in WWQRR Chapter 1, Section 20. *See, e.g.*, Tr. 636-637, 641.

9. DEQ used appropriate scientific methods to set EC and sodium limits in the Modified Permit under Chapter 2, Section 5(c)(iii)(C)(IV) of the WWQRR. Even if DEQ did not use appropriate scientific methods to set EC and sodium limits in the Modified Permit under Chapter 2, Section 5(c)(iii)(C)(IV) of the WWQRR, the Modified Permit should nonetheless be affirmed because the limits are protective and will not result in a measurable decrease in crop production. *See, e.g.*, Tr. 636-637, 639, 641.

10. A preponderance of the evidence shows that the default limit of 1330 µmhos/cm for ECw the EQC has previously approved as being protective for irrigation of alfalfa need not be changed to background water quality.

11. The "default" method was a proper method for deriving protective numeric effluent limits in this case. *See, e.g.*, "Findings of Fact, Conclusions of Law and Order," In Re: Willow Creek General Permit, Pumpkin Creek General Permit, and Four Mile Creek General Plan, EQC Consolidated Docket Nos. 06-3815, 06-3816 and 06-3817, Aug. 12, 2008; Tr. 388-391, 636-637, 639.

DATED this 11th day of January, 2010.

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CERTIFICATE OF SERVICE

This certifies that a true and correct copy of the foregoing RESPONDENTS' PROPOSED FINDINGS OF FACT & CONCLUSIONS OF LAW was served this 11th day of January, 2010 by email, addressed as follows:

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