

# DEVON EXHIBIT B

## STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

### APPLICATION OF FOUNDATION ENERGY MANAGEMENT, LLC FOR APPROVAL OF A SALT WATER DISPOSAL WELL IN LEA COUNTY, NEW MEXICO.

CASE NO. 21145

#### TESTIMONY OF DEREK OHL

1. My name is Derek Ohl, and I am a petroleum geologist with Devon Energy Production Company, L.P. (“Devon”).

2. I have previously testified before the New Mexico Oil Conservation Division as an expert witness in petroleum geology, and my credentials have been accepted and made a matter of public record. Attached as **Devon Exhibit B-1** is my resume, which provides an overview of my educational background, my work history and the professional associations in which I am involved.

3. I am familiar with the application filed by Foundation Energy Management, LLC (“Foundation”) in this case and have conducted an analysis of the geology in the subject area.

4. Foundation proposes to inject produced saltwater through its Blue Quail Federal #1 Well into the Bell Canyon formation between 4,640 feet and 4,850 feet below the surface. The Bell Canyon formation is the uppermost formation within what is commonly referred to as the Delaware Mountain Group, which is comprised of the Cherry Canyon formation and Brushy Canyon formation at its base.

5. **Devon Exhibit B-2** shows a line of cross section from A to A’ across the area of injection into Blue Quail Federal #1 Well. I selected the two wells depicted, Devon’s Federal Sand 18 SWD #1 and Foundation’s Blue Quail Federal #1, because they are representative of the

geology in the area and depict the proposed target injection zone in the Bell Canyon formation, as well as Devon's targets for horizontal well development in the area within the deeper Bone Spring and Wolfcamp formations. The red boxes in the exhibit identify the location of Devon's existing well pads. The green boxes identify the location of Devon's surface facilities that serve its production in the area.

6. **Devon Exhibit B-3** is a structural cross section that I prepared using the well logs from the wells in Devon Exhibit B-2. Each well on the cross-section contains gamma ray, resistivity, and porosity logs. I have indicated the top of each formation in the cross section with a purple line, starting with the top of the Delaware formation, moving down through the Cherry Canyon and Brushy Canyon formations, which together comprise the Delaware Mountain Group. Along the well logs for the Blue Quail Federal #1 on the right side of the cross section, I have denoted the location of the proposed injection interval with a red star between 4,640 feet and 4,850 feet below the surface.

7. The Delaware Mountain Group is mostly comprised of siltstone and sandstone. There are no geologic barriers or impermeable zones within the Delaware Mountain Group to control or limit the dispersion of produced water within the Delaware Mountain Group once it is injected into the Bell Canyon, as Foundation proposes to do. Given this and because the formations that make up the Delaware Mountain Group generally have relatively high porosity and permeability, it is unlikely that volumes injected through the Blue Quail Federal #1 will remain within the proposed injection interval. Over time, volumes injected into the Bell Canyon are likely going to migrate horizontally out and vertically down through the Delaware potentially to the base of the Brushy Canyon.

8. Also in Devon Exhibit B-3, in the well logs for the Federal Sand 18 SWD #1, I have denoted the top of the Bone Spring formation and its members, starting with the Leonard Shale, down through the Wolfcamp formation and its members, and into the Strawn formation. Along the well log, I have indicated with black stars the two zones in the Bone Spring formation in which Devon is currently producing from horizontal wells in the area. The ten green stars denote potentially prospective zones that Devon has identified for future testing and development in both the Bone Spring and Wolfcamp formations.

9. Of the ten potentially prospective zones identified within the Bone Spring and Wolfcamp formations indicated with green stars, Devon has appraised five of them and has determined that they are each prospective. Devon is developing plans to drill horizontal wells to test and develop these five zones in this acreage over the next five years. Devon is also in the process of appraising the sixth and seventh potentially prospective zones now.

10. Based on Devon's current plans to develop the zones in this acreage that it has determined to be prospective, Devon will have to drill approximately 20 well bores through Foundation's proposed injection interval to access and develop its mineral interests in the Bone Spring and Wolfcamp formations within the one-half mile area of review surrounding Blue Quail Federal #1. Expanding that analysis to a one-mile radius, Devon will have to drill approximately 40-50 well bores through the proposed injection interval to access its Bone Spring and Wolfcamp targets. Additional well bores may be required to develop other zones identified as potentially prospective in Devon Exhibit B-3 but which have not yet been appraised for horizontal testing and development.

11. **Devon Exhibit B-4** identifies the locations of Devon's existing well facilities and well pads relative to Foundation's proposed Blue Quail Federal #1 injection well. As in Exhibit

B-2, the red boxes represent Devon's existing well pad locations on which Devon's currently producing wells in the area have been drilled and from which some of Devon's planned future wells also will be drilled. As indicated on the exhibit, the distances from Devon's two closest well pads to the Blue Quail Federal #1 are 268 feet and 455 feet.

12. That proximity means that there is little distance to buffer impacts on Devon's existing well bores from Foundation's proposed injection fluids. Given the connectivity within Delaware Mountain Group, it is likely that Devon's existing and future well bores will be in contact with Foundation's inject plume across the entire length of the Delaware Mountain Group. It also means that after Foundation starts injecting through the Blue Quail Federal #1, any wells Devon plans to drill from these pads to develop additional zones within the deeper Bone Spring and Wolfcamp formations must be drilled through Foundation's shallower injection plume.

13. Exhibits B-1 through B-4 were prepared by me, under my direct supervision, or they constitute Devon business records.

14. To protect its correlative rights and prevent waste, Devon requests that the Division deny Foundation's application.