

February 27, 2009

Mr. Don Reimer, Chaffee County Engineer
Chaffee County
P.O. Box 699
Salida, CO 81201

Re: #1687 – Chaffee County – Nestle 1041 Application

Dear Don:

The purpose of this letter report is to provide a summary of our review of the water rights, surface water, groundwater, and water quality aspects of the Nestle Waters of North America (Nwana) 1041 application.

Water Rights Impacts. Nwana has provided a draft lease agreement with the City of Aurora concerning the water rights that will be used for this project. Under the draft lease, 200 acre-feet per year of fully consumable water will be provided on an interruptible basis during a ten-year primary term. Nwana may request a single renewal ten-year term that Aurora may grant or decline at Aurora's sole discretion. Although the draft lease does not specifically describe the source of water, it is our understanding that Twin Lakes Reservoir is the most likely source available to Aurora. Releases from this source enter the river approximately 25 miles upstream of the springs. Because Twin Lakes water is provided by transbasin delivery from the Colorado River basin into the Arkansas River basin, there are no water rights impacts within Chaffee County as that water is delivered into Twin Lakes, stored, and released for the benefit of Nwana.

Pumping by Nwana will result in a lagged response in the discharge rate of the on-site springs, thereby causing a lagged depletion to the flow of the Arkansas River. Stated differently, the discharge rate of the springs will presumably not fully recover for a period of days or weeks after the pumps are shut off, thereby causing a continued lagged reduction on the spring discharges into the river. From a water rights perspective, this type of lagged depletive effect to groundwater flows is a common matter that is typically dealt with in water rights augmentation plans. In other words, Nwana can presumably

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make lagged releases from Twin Lakes to cover the lagged depletions to groundwater discharges at the springs.

NWNA will presumably be required under Colorado water law to obtain Water Court approval of a plan for augmentation plan pursuant to the lease of water from Aurora. This plan for augmentation may temporarily take the form of an administratively approved Substitute Water Supply Plan until the Water Court approval is granted.

Upon interruption or expiration of the Aurora lease in 10 or 20 years, some other water rights source would obviously be needed. Depending on the water source to be used, there could begin to be significant impacts in Chaffee County at that time. We are unable to speculate on the type and extent of such impacts, but we presume that this would be a matter of particular concern to the Board of Commissioners.

Surface Water Impacts. Withdrawal of 200 acre-feet per year is equivalent to an average year-round rate of 124 gallons per minute (gpm) or 0.28 cubic feet per second (cfs). Such diversions represents about 0.4 percent of the flow of the Arkansas River during the lowest flow day on record. This amount of diversion would not be discernable to water users along the river. However, such diversions should be considered in the context of the cumulative depletions that occur by all other water users along the Arkansas River. If NWNA provides full replacement of its depletions, as planned, through release of up to 200 acre-feet at Twin Lakes under the Aurora lease, there would be no net depletions to the surface flow of the Arkansas River in Chaffee County.

In addition to the matters discussed above, the project will also cause localized reductions in the discharge from springs at the Ruby Mountain and Bighorn sites. The average projected pumping rate at the Ruby Mountain site is 124 gpm, so if this is the only site used, the pumps will operate continuously to produce sufficient water for operations. If the Bighorn site is utilized, NWNA estimates that up to 70 gpm will be pumped from the Bighorn aquifer during late fall and early winter, with most of the remainder pumped from the Ruby Mountain site.

An initial pumping test of the aquifer at the Ruby Mountain and Bighorn sites extended for 2.6 days and a second pumping test extended for a similar period of time. The pumping tests conducted by the Applicant indicate that a reduction occurred in the rate of spring discharges to the Arkansas River. For example, during the April 2008 pumping test at Ruby Mountain, test well RMBH-2 was pumped for 72.5 hours at an average rate of 137 gpm. At the conclusion of the pumping phase of that test, spring discharge declined by 87.5 gpm after accounting for ambient trends, which equates to 64 percent of the average pumping rate. In our opinion, the pumping tests were not of sufficient duration to make an accurate prediction of the long-term impact on spring discharge. At most, a maximum sustained pumping rate of 124 gpm would result in a similar net reduction of spring discharge at the two sites. It is likely that the impact on spring discharge rate would be less than one-for-one.

For the Ruby Mountain site, the discharges are the lowest during the spring season. The smallest observed flow through the weir was approximately 900 gpm during spring. A maximum sustained pumping rate of 124 gpm would presumably result in a reduction of no more than 14 percent of the discharge at the weir during spring, based on the 2007-2008 data (14% of 900 gpm = 124 gpm). During other times of the year when spring discharge is much greater than 900 gpm, the percentage reduction in spring discharge would be less. Overall annual reductions in spring discharge would probably be less than 10 percent. If the impact on spring discharge rate is less than one-for-one, the reduction in spring discharge would be proportionately reduced.

It is our understanding that the maximum pumping rate at the Bighorn site would be 70 gpm, if this site is used, and such pumping would occur mainly during fall and early winter when flows are at their maximum. Assuming a spring discharge rate of 600 gpm at the Bighorn site during fall and early winter, well operations could cause a maximum 12 percent reduction in the spring discharge (12% of 600 gpm = 70 gpm).

The Applicant anticipates that the Bighorn site will operate at a rate of no more than 40 gpm during the spring season. Assuming a minimum spring discharge rate of 97 gpm, the proposed withdrawal of 40 gpm could cause a maximum reduction of roughly 41 percent of the spring discharge during this time period (41% of 97 gpm = 41 gpm).

As discussed in the "Groundwater Impacts" section of this report, a substantial amount of the water supply for the springs consists of irrigation return flows from approximately 700 acres (average of 2005 and 2007 data) of irrigated crops. If the owners of the irrigation water rights choose to reduce or curtail their future operations, the spring discharges will presumably decrease due to the reduced recharge to groundwater. Consequently, pumping by NWNA will result in further reductions in the spring discharges. Under the scenario of decreased irrigation, it is possible that NWNA's pumping could cause the springs to go dry, at least during portions of the year.

Impacts to surface and groundwater are closely interrelated, especially in the area where the unconfined aquifer discharges to the Arkansas River. Lowering the water table in the general vicinity of the wells may have a continued lagged effect on the spring discharge rates for days or weeks, even if pumping does not continue to occur. This may hold true until enough recharge occurs to replenish the groundwater table back to its original state.

To the extent that the spring discharges may be reduced or eliminated as a result of NWNA's operations, there could be changes in the size and nature of the wetlands at the Ruby Mountain and Bighorn sites, as discussed in a separate section of this report.

Groundwater Impacts. Based on our review of the pumping tests, groundwater gradients, geology, and other factors, we are not aware of any potential for groundwater impacts that would extend across to the west side of the Arkansas River.

The local aquifer provides water to 22 domestic well users, 6 commercial well users, and 2 users for agricultural purposes. All of these wells are located up-gradient and greater

than 600 feet away from the Ruby Mountain borehole No. 2, which is the location of the pump operations. A domestic well is located approximately 92 feet away owned by the Hagen's. This well was used as a monitoring well for the pump drawdown test. NWNA indicates that withdrawals will not be made from this well in the future if the NWNA withdrawals are permitted. The groundwater investigations report for NWNA indicates that the well pumping will not affect any other users and that the drawdown effects of pumping are highly localized, based on the pump tests performed on site. Such analysis appears to be reasonable and we are not aware of any potential for groundwater impacts to the owners of other wells.

As noted above, the January pump test of the aquifer at the Ruby Mountain site and the Bighorn Site lasted 2.6 days, and the April/May pumping test extended for 3 days at Ruby Mountain and approximately 2 days at Bighorn. The groundwater analysis by NWNA states that responses from changes in withdrawal are not instantaneous and equilibrium may not be reached until two days or more. During these tests, the pump rate was frequently changing and the entire test did not extend much longer than two days, thus an equilibrium state was not achieved during these tests. With these relatively short tests, we are unsure whether definite conclusions can be drawn based on the two tests performed at this site with respect to the ability of NWNA to achieve 200 acre-feet per year of long-term yield. To the extent that there might be potential shortages in such supply for the proposed project, this is a business risk for NWNA.

The groundwater analysis by NWNA indicates that a substantial amount of the groundwater recharge may be attributable to irrigation return flows in the area located up-gradient from the proposed pumping sites. Diversion records indicate that the average annual diversion for such irrigation is approximately 8,500 acre-feet. We have not specifically evaluated the irrigation practices in that area, but we concur in the general estimate of a 30 percent return flow to groundwater from the ditches, based on comments by the local Water Commissioner, Bruce Smith. The estimated evapotranspiration for irrigation also seems reasonable. Based on the estimated groundwater recharge in the groundwater investigations report, current irrigation

practices are estimated to account for between roughly 40 and 60 percent of the total estimated groundwater recharge. If the owners of the irrigation water rights choose to reduce or curtail their future operations, the recharge to groundwater will be reduced, thus the spring discharges will presumably decline. The amount of such potential reduction is unknown, but there could be potential impacts to the discharge of the springs, as discussed in the "Surface Water Impacts" section of this report. We conclude that the potential changes to the groundwater regime, caused by changes in the up-gradient irrigation, is a business risk for Nwana.

Water Quality. The water quality issues associated with the surface water indicate that there will be minimal changes associated with the current quality of the water in the Arkansas River due to the removal of the spring water. The overall chemical water quality of the Arkansas River is good, suitable for municipal and industrial water supply purposes, after appropriate filtration and disinfection. The chemical water quality of the spring water is also good. Therefore, the removal of spring water by Nwana would result in no discernable change in water quality of the Arkansas River. In our opinion, there is no significant water quality impact associated with this project.

We are not aware of any chemical discharges that would occur as a part of this project. We presume that Nwana would comply with Chaffee County erosion control, fuel storage, and other similar requirements during construction of the proposed facilities, but such water quality impacts are beyond the scope of our review.

Delia Malone Report. The report by Delia Malone is mainly concerned with the springs and wetlands and their connection to the aquifer. The effects of the changes to the wetlands were reviewed with regard to vegetation and habitat. In reviewing her report, we have commented only on the areas of the report in which we have expertise. It is beyond our expertise to comment on any of the effects this reduction in flow will have on plant life, animal life, or habitat.

In paragraph II.A.1.a. of her report, Ms. Malone pointed out that there are numerous other wells located in the adjacent 890 acres that may be withdrawing water. She states that "Although the proposed amount to be withdrawn by Nwana may not by itself negatively impact the aquifer, the cumulative withdrawal may exceed the sustainability of the aquifer". In our opinion, any impacts caused by other existing water users are reflected in the observed spring discharge rates, so any concern about cumulative withdrawals is probably unwarranted.

In our opinion, the comments by Ms. Malone in paragraph II.A.3. of her report probably overstate the combined potential impacts of climate change and the Nwana project. If pumping operations continue for many years, climate change may affect the streamflow of the Arkansas River and may, in turn, affect the sustainable yield of the wells. However, we do not anticipate that this project will ever cause drastic changes to the streamflow or groundwater, even in the event of severe climate change.

If nearby areas are taken out of irrigation, the spring discharges would be reduced due to changes in the significant contribution of irrigation return flows. These contributions were estimated to be roughly between 40 and 60 percent of the total recharge to the aquifer. Not only would land use changes impact the volume of recharge, it would be expected to impact the vegetation and habitat in the area.

Conclusions. We have made the following conclusions:

1. It is our understanding that Nwana is planning to obtain an interruptible 10-year lease with the City of Aurora to provide augmentation releases from the Twin Lakes Reservoir as a replacement source for the water pumped. This lease might be extended for an additional 10-year period. Such a water source would act as a replacement supply for the appropriate times and amounts, thus preventing water rights impacts and surface water impacts in Chaffee County.
2. Upon interruption or expiration of the Aurora water lease, some other water rights source would obviously be needed. Depending on the water rights to be used, there could begin to be significant impacts in Chaffee County at that time.
3. The project will cause localized reductions in the discharge from springs at the Ruby Mountain and Bighorn sites. For the Ruby Mountain site, the maximum

sustained pumping rate of 124 gpm would presumably result in a reduction of less than 10 percent of the springs' annual discharge, based on the 2007-2008 data. For the Bighorn site, there could be a reduction in the seasonal springs' discharge, ranging from 12 to 41 percent. The overall percentage impacts would be proportionally less if the impact on spring discharge rate is less than one-for-one.

4. We are not aware of any potential for groundwater impacts that would extend across to the west side of the Arkansas River. We are not aware of any impacts to existing well users on the east side of the river.
5. The pumping tests used by NWNA were relatively short in duration (2.6 days and 3 days for the Ruby Mountain site and 2.6 days and 2 days for the Bighorn site). We are unsure whether definite conclusions can be drawn based on tests of such a short duration where an equilibrium state was not achieved. We are unsure whether NWNA will be able to achieve a reliable 200 acre-feet per year of long-term yield, but this would be one of the business risks for NWNA.
6. The existing spring discharges at the project sites are largely supported by irrigation return flows from the historical and current irrigation in the terrace along the east side of the river. If such irrigation is reduced or curtailed, potential changes would probably occur in the groundwater regime in the vicinity of the springs. Such impacts on spring discharges would be much more extensive than the anticipated impacts from the NWNA project.
7. We are not aware of any significant water quality impacts associated with the project.

Recommendation. We recommend the following:

It may be appropriate for the Board of Commissioners to seek some type of assurance that dry-up of irrigated lands in Chaffee County will not be used as a water rights source for this project after expiration of the Aurora lease.

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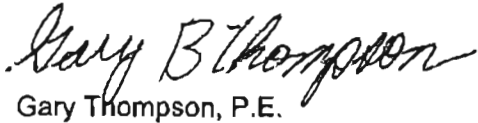
We hope this information is adequate for your present needs. Please contact us if you have any questions or comments.

Very truly yours,

W. W. Wheeler and Associates, Inc.

A handwritten signature in black ink, appearing to read "Danielle R. Tripp". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Danielle R. Tripp, E.I.

A handwritten signature in black ink, appearing to read "Gary B. Thompson". The signature is cursive and somewhat stylized, with a long horizontal stroke at the end.

Gary Thompson, P.E.