

IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

IN THE MATTER OF PERMIT 16844)
CERTIFICATE 4542 AND PERMIT)
16845 CERTIFICATE 4543 WHICH)
WERE APPROPRIATED FOR QUASI-)
MUNICIPAL AND AIR CONDITIONING))
PURPOSES FROM AN UNDERGROUND)
SOURCE IN THE TRUCKEE MEADOWS)
GROUNDWATER BASIN, WASHOE)
COUNTY, NEVADA.)

SUPPLEMENTAL
RULING ON REMAND

3901

GENERAL

I.

Application 16844 was filed on January 25, 1956, by the Mapes Hotel Corporation, to appropriate 1.5 cfs (673 gallons per minute (gpm)) of water from an underground source for air conditioning (cooling and heating) and domestic purposes within a portion of the N1/2 SE1/4, Section 11, T.19N., R.19E., M.D.B.&M. The point of diversion was described as being within the NW1/4 SE1/4 Section 11, T.19N., R.19E., M.D.B.&M. A permit was issued on May 28, 1956, and Certificate 4542 was issued on June 14, 1957, for 1.5 cfs of water for air conditioning and domestic purposes within the aforementioned place of use. No annual duty was specified on Certificate 4542 as to the amount of water placed to beneficial use.¹

II.

Application 16845 was filed on January 25, 1956, by the Mapes Hotel Corporation, to appropriate 2.0 cfs (898 gpm) of water from an underground source for quasi-municipal (hotel) and domestic purposes within a portion of the N1/2 SE1/4, Section 11, T.19N., R.19E., M.D.B.&M. The point of diversion was described as being within the NW1/4 SE1/4 Section 11, T.19N., R.19E., M.D.B.&M. A permit was issued on May 28, 1956, and Certificate

¹ Public record of the State Engineer, See file 16844.

4543 was issued on June 14, 1957, for 2.0 cfs of water for quasi-municipal and domestic purposes within the aforementioned place of use. No annual duty was specified on Certificate 4543 as to the amount of water placed to beneficial use.²

III.

Pursuant to NRS 534.090, applications for extension of time to prevent the working of a forfeiture were granted for Permit 16844, Certificate 4542 and Permit 16845, Certificate 4543 to March 8, 1990, based on evidence and testimony presented at a hearing held August 18, 1989. ^{1,2} No estimate of the water placed to beneficial use was made at that time since no applications to change were pending approval.

IV.

Applications 55375 and 55376 were filed on October 12, 1990, to change the point of diversion, manner and place of use of Permit 16844 Certificate 4542 and Permit 16845, Certificate 4543, respectively. The review of these applications resulted in the State Engineer requesting information from the permittee concerning the amount of water actually placed to beneficial use under Permit 16844, Certificate 4542 and Permit 16845, Certificate 4543.

On November 15, 1991, the State Engineer issued Ruling No. 3844 which defined the amount of water placed to beneficial use under Certificates 4542 and 4543 to be no more than 888.91 acre-feet annually (AFA).³ Subsequent to the issuance of Ruling No. 3844, Applications 55375 and 55376 were withdrawn by the applicant.

V.

A Petition for Judicial Review was filed by the permittee concerning Ruling No. 3844 with the Second Judicial District

² Public record of the State Engineer, See file 16845.

³ See Ruling 3844 on file in the office of the State Engineer.

Court of the State of Nevada in and for the County of Washoe on December 9, 1991.

VI.

A Stipulation and Order of Remand was issued by Judge Handelsman on June 8, 1992, wherein the matter was remanded to the State Engineer in order that additional information could be presented. A hearing was held June 29, 1992 to more clearly define the amount of water placed to beneficial use.

VII.

On June 26, 1992, a field investigation was held on the site of the Mapes Hotel to review the equipment and plumbing system in place at the Mapes Hotel. Representatives of both the State Engineer's office and the permittee were present at the field investigation.

VIII.

On June 29, 1992, a public administrative hearing was held to determine the amount of water placed to beneficial use under Permits 16844 and 16845 at the time the proofs of beneficial use were filed on December 14, 1956.⁴

FINDINGS OF FACT

I.

Permit 16844 was issued on May 28, 1956 for air conditioning (cooling and heating) and domestic purposes for a maximum diversion of 1.5 cfs for use at the Mapes Hotel. The application stated the well was completed in December 1945 and water had been used since 1947. The proof of completion of work was filed on December 14, 1956, which indicated the well capacity was "approximately 600 gallons per minute...and the water is conveyed to the air conditioning apparatus, and for cooling, heating and domestic purposes throughout the building by various size pipes".¹

⁴ See transcript, State Administrative Hearing June 29, 1992.

The Proof of Beneficial Use was also filed on December 14, 1956, and indicated that "all water used for air conditioning and cooling is diverted into the Truckee River after use in the Hotel...air-conditioning water is used for pre-coolers and also condensing units for main refrigeration system. Also use small amounts of water for boiler use in heating. Domestic water is used also for baths, toilets, wash basins and restaurant use."¹

II.

Permit 16845 was issued on May 28, 1956, for quasi-municipal (hotel) and domestic purposes for a maximum diversion of 2.0 cfs for use at the Mapes Hotel. The application indicates the well was drilled in January 1947 and water had been used since that time. The Proof of Completion of Work was filed on December 14, 1956, and stated the well capacity to be "approximately 800 gallons per minute...and the water is conveyed for domestic and general hotel purposes throughout the building by various size pipes."²

The Proof of Beneficial Use was also filed on December 14, 1956, and indicated "Water used for domestic purposes has been found safe for human consumption. Water is also used for main refrigeration system and small amounts are used for boiler use and heating and cooling. Domestic water is also used for baths, toilets, wash basins, restaurants and general hotel purposes."²

III.

An authorization to discharge was granted by the Nevada Division of Environmental Protection (NDEP) to the Mapes Hotel and Casino Corporation for discharge of water from the Mapes Hotel to the Truckee River under Permit NV 0020630-001 and NV 0020630-002. This permit took effect on October 6, 1978, and was to expire at midnight on June 30, 1983, and allowed a total of .74 million gallons a day (MGD) to be discharged to the Truckee

River.⁵ If this maximum amount of water was discharged every day of the year, the total acre-feet discharged per year would have been 828.91 acre-feet.

IV.

The State Engineer finds that in Nevada, beneficial use shall be the basis, the measure and the limit of the right to the use of water.⁶ The State Engineer's records were incomplete as to the volume of the water beneficially used in the Mapes Hotel prior to 1983. Therefore, the permittee was asked to quantify the water put to beneficial use under Certificate 4542 and Certificate 4543. The request was made in 1991 because applications to change the point of diversion, place and manner of use of all of Certificates 4542 and 4543 were on file in the office of the State Engineer. In compliance with NRS 533.035, it has been the policy of the State Engineer to define any rights, without a specified duty on the certificate, at the time any change to that right is requested.

V.

Almost all permits issued by the State Engineer allow an instantaneous diversion rate much larger than the annual duty authorized. This practice is followed since, in most instances, pumps do not need to be operated at all times due to daily and seasonal fluctuations in demand. For example, a permit to irrigate 320 acres in Northern Nevada would be granted a permit for 5.4 cfs with a duty of 4 acre-feet per acre of land irrigated. The 5.4 cfs expanded out for the entire year would be 3,909 acre-feet, whereas the amount of water needed to irrigate 320 acres is 1280 AFA.

⁵ Nevada Division of Environmental Protection records under Permit NV 0020630.

⁶ NRS 533.035.

VI.

The permittee submitted to the State Engineer an estimate of the amount of water placed to beneficial use which was prepared by Merle Winburn employed as the chief engineer for the Mapes Hotel during the period April 1972 through March 1982.⁷ This estimation was reviewed by the State Engineer along with information contained on various proofs and documentation on file in the office of the State Engineer. In addition, the State Engineer reviewed the limits contained in the NDEP's Permit NV 00020630, issued to the Mapes Hotel for discharge into the Truckee River of excess well water, non-contact cooling water and boiler blowdown. The State Engineer found in Ruling No. 3844 that the total amount of water placed to beneficial use under Permits 16844 and 16845 was no more than 888.91 AFA based largely on the Winburn estimate.

VII.

The permittee contends that the upper limit declared in Ruling No. 3844 of 888.91 AFA is too low and the amount of water placed to beneficial use is equal to the amount of water generated by both wells operating continuously 95% of the time. They contend that since the State Engineer was unaware that non-contact cooling water was discharged to the sewer system, in addition to being discharged to the Truckee River, the estimate was too low.⁸ A consultant to the permittee, prepared an analysis, for the June 29, 1992, hearing, which stated that 1354.8 AFA of non-contact cooling water was discharged to the river and 973.5 AFA was discharged to the sewer.⁹ In addition,

⁷ An affidavit of Merle B. Winburn was received on April 2, 1991 which included a five page document entitled "Estimate of Beneficial Water Use". This document will hereinafter be referred to as Winburn's estimate.

⁸ See transcript, State administrative Hearing June 29, 1992.

⁹ See Exhibit 13, State Administrative Hearing June 29, 1992, prepared by George Ball P.E., hereinafter referred to as Ball report.

73.4 AFA was estimated to be domestic use discharged to the sewer and 12.9 AFA was consumptively used on site. These components total 2414.6 AFA. The wells running continuously 95% of the time are only capable of producing 2145 AFA. The consultant hypothesized that the discrepancy in the numbers could be due to the fact: 1) the wells could produce more than estimated or 2) the hotel water demands were less than estimated.⁹ The consultant could offer no explanation on how 1354.8 AFA was discharged to the Truckee River in apparent violation of the discharge limit of 828.91 AFA.¹⁰

VIII.

The State Engineer finds that the amount of water used for culinary purposes of 47.1 AFA as contained in the Winburn estimate is reasonable. The State Engineer further finds that the amount of water used in the hose bib of 12.9 AFA is also reasonable. The permittee agrees that these figures are correct, even though the Ball report estimates a larger use. Westpac Utilities, the municipal water purveyor for this area, also analyzed the water needs for hotel purposes and found the 60 AFA figure to conform with their estimate of water use for a hotel of that size and age.^{1, 2}

IX.

The State Engineer does not agree with the permittee on the estimate of the water placed to beneficial use as part of the cooling system. The Winburn estimate analyzed the cooling system as well as the other hotel uses and listed the equipment utilized and the water needs of each piece of equipment. The State Engineer found in Ruling No. 3844 that the Winburn estimate for water use was too high since the two wells could not produce the amount of water needed when the system was operating at full capacity. After a review of the physical system at the field investigation, reviewing the information contained in the

¹⁰ See transcript pp. 78 and 79, State Administrative Hearing June 29, 1992.

consultant's report which added additional air conditioning units, and testimony at the administrative hearing, the State Engineer makes the same finding.

The testimony was that the wells ran 95% of the time over a 10 year period.⁹ Further testimony indicates that the air conditioning ran 40% of the time averaged over the entire year. The engineer and consultant assumed that the air conditioning appliances ran at 40% capacity for the entire year. However, when the State Engineer looks at an instantaneous moment in time when the air conditioning would have been running and there were other demands in the hotel, the State Engineer finds that the arithmetic sum of the water demand for each appliance, as given by the engineer and consultant, far exceed the capacity of the two wells and pumps. Therefore, the State Engineer rejects the assumptions as being unrealistic and illogical.

If the water use figures for each unit used in the engineer's estimate and the consultant's report were used, the wells would have had to produce 3650 gpm which is 261% higher than their capacity just for air conditioning purposes, without considering other instantaneous hotel needs. Obviously, on a hot summer day, all the units would be running to meet the cooling demand or there would be no need for all the equipment. The system ran in series with each piece of equipment coming on line as the need arose which was temperature dependent.¹¹ The State Engineer further finds that the engineer's and consultant's assumptions are inconsistent with the NDEP Discharge Permit for temperature limitation, which allowed a maximum of 70°F discharge to the Truckee River during the summer (June to September) and 56°F during the rest of the year (October to May). Since the initial temperature of the well water was 50°F,¹² only 6°F heat

¹¹ See transcript pp. 31, 63, 77 and 78, State Administrative Hearing June 29, 1992.

¹² See transcript p. 62, State Administrative Hearing June 29, 1992.

gain could have been experienced in the entire air conditioning system while still meeting the discharge limitation during the winter months.

Since more detailed information about the system became available to the State Engineer as a result of the field investigation and the administrative hearing, a comprehensive analysis of the Mapes Hotel water needs was conducted by staff of the State Engineer. Each piece of equipment was analyzed for a reasonable water requirement at full capacity and on an annual basis. The analysis yielded a peak demand of 1271 gpm at full capacity for the air conditioning units.¹³ Since the two wells running simultaneously were capable of producing 1400 gpm, a fact not in dispute,¹⁴ the system could meet peak cooling demands and still have available 129 gpm for other hotel uses that would occur at the same time. The units which would have discharged into the Truckee River, based on the Ball report would have produced 0.47 MGD which was within the NDEP Discharge Permit limitation of .74 MGD. Since some excess well water would also have been discharged into the Truckee River in addition to the non-contact cooling water, this result seems reasonable.

IX.

In testimony at the hearing, the engineer and consultant noted that the estimate may have been too low for some of the equipment.¹⁵ The State Engineer staff also analyzed each piece of equipment in order to determine a reasonable operating time. The State Engineer agrees with the engineer's estimate and the consultant's report on utilizing the 40% use factor for most equipment. However, the State Engineer also finds that some of the cooling equipment utilized in the casino, kitchen and

¹³ See files 16844 and 16845, Memo of Tony Greene, Dave Modricker and Christine Thiel.

¹⁴ See transcript p. 15, State Administrative Hearing June 29, 1992.

¹⁵ See transcript pp. 21 and 37, State Administrative Hearing June 29, 1992.

equipment areas would need to be operated as much as 90% of the time.¹² The result of this analysis was that 1036 AFA was reasonably put to beneficial use for the Mapes Hotel by use of the cooling equipment.¹²

X.

At the field investigation, the permittee mentioned for the first time that the equipment referred to in the engineer's affidavit as "Cool Coils," "Well Water Cooling Coil" and "Pre-Cooling" and the Ball report as "Coils" were also used under certain conditions for heating purposes. The State Engineer finds that the primary use of the coils was for cooling purposes but some limited use may have taken place during the winter when some heating of the fresh air supply could have occurred. The State Engineer does not agree that these coils could have utilized 240 gpm of water. The pipe coils were approximately 3/8 inch in diameter with bends to maximize area of exposure. The amount of friction loss the water experienced in the coils results in a maximum of 43 gpm, physically being able to pass through the coils. The actual amount of water utilized was probably much smaller.¹² The slower the water passed through the coils the more heat they could either absorb or give up depending on the outside air temperature. Therefore, a slower rate of water movement also is logical from thermodynamic considerations. The use of water in these coils for both heating and cooling is included in the 1036 AFA calculation of water put to beneficial use as part of the cooling system.

In addition, a small amount of water was also used for heating purposes as boiler make-up water. The boiler was heated by either gas or oil and was a closed-loop system which heated the air supplied to the building through a forced air system.¹⁶ Based on verbal discussion with the engineer, the State Engineer finds that 0.2 acre-feet annually was utilized for boiler make-up water. The consultant testified that Sierra Pacific Power

¹⁶ See transcript p. 81, State Administrative Hearing June 29, 1992.

Company provided this supply since water quality was a concern.¹⁷ However, at the time the proof of beneficial use was filed, reference was made that the well water was used in this manner. The State Engineer finds that, even though a lower water demand for the cooling/heating appliances would be more efficient for a temperature exchange, the maximum amount of water placed to beneficial use for cooling and heating is 1036 AFA. In addition, the State Engineer finds that 0.2 AFA was placed to beneficial use for boiler make-up water and 60 AFA was placed to beneficial use by other hotel demands for a total of 1096.2 AFA. This finding is consistent with the capacity of the wells and the discharge permit to the Truckee River.

CONCLUSIONS

I.

The State Engineer has authority of the subject matter of this action.¹⁸

II.

The State Engineer concludes that the Proofs of Beneficial use filed under Permits 16844 and 16845 did not define the amount of water placed to beneficial use at the Mapes Hotel.

III.

The State Engineer concludes that beneficial use is the basis, the measure and the limit of the right to the use of the water.

IV.

The State Engineer concludes that the Winburn estimate and Ball report overestimated the amount of water placed to beneficial use. Their analysis would result in a water supply system that would have been unable to produce more than 40% of

¹⁷ See transcript p. 73, State Administrative Hearing June 29, 1992.

¹⁸ NRS 534.090.

peak demand of the cooling system, excluding the other water needs of the hotel. Clearly a reasonable water supply system would be designed to meet the peak demand of the entire hotel. In addition, the Winburn estimate and the Ball report indicate that the amount of water used by the cooling and heating coils greatly exceeded the physical capacity of the coils.

V.

The State Engineer concludes that the analysis of the water supply system at the Mapes Hotel conducted by staff, resulted in a reasonable system which could meet peak demands, was physically possible and would not result in a violation of their discharge permit.

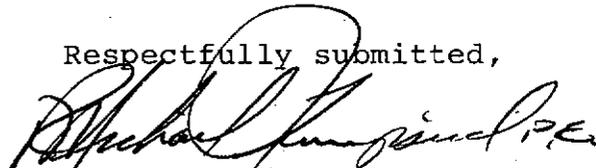
VI.

The State Engineer concludes that 60 acre-feet annually was placed to beneficial use at the Mapes Hotel for domestic purposes; .2 AFA was used for boiler water make-up and a maximum of 1036 AFA was placed to beneficial use as part of the cooling system.

RULING

The State Engineer rules that the amount of water placed to beneficial use under Permits 16844 and 16845 was no more than 1096.2 acre-feet annually and the permittee has been granted extensions of time to prevent the working of a forfeiture for this amount.

Respectfully submitted,



R. MICHAEL TURNIPSEED, P.E.
State Engineer

RMT/CT/pm

Dated this 18th day of
August, 1992.