SOUTHERN NEVADA
WATER AUTHORITY

Water Resources Division

Technical Memorandum

To: Michael Stanka

From: James Watrus, Sr. Hydrologist, Southern Nevada Water Authority

Date Issued/Revised: June 15, 2017

Subject: Spring Classification

1.0 INTRODUCTION

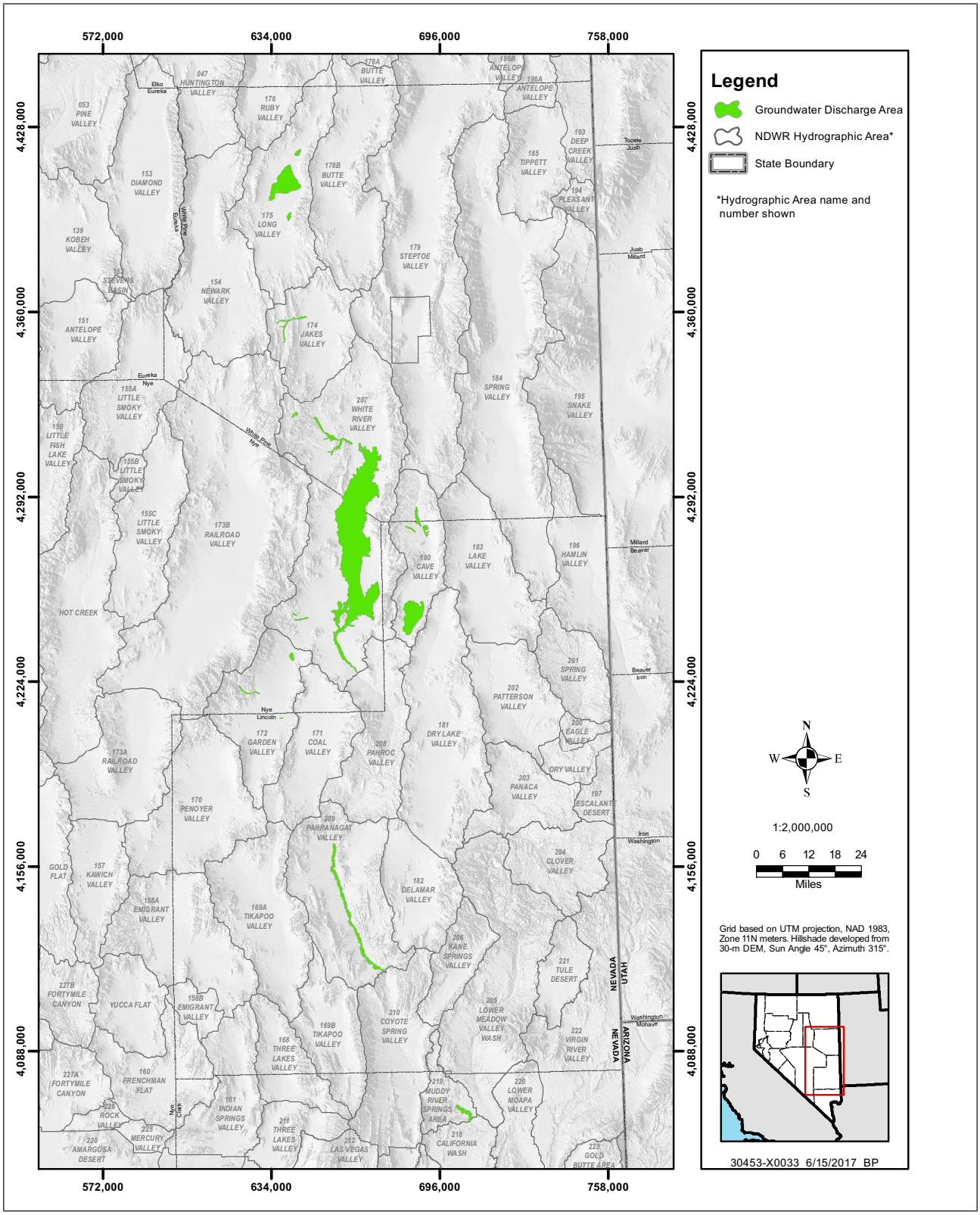
In response to the Seventh Judicial District Court's remand of the 2011 Nevada State Engineer (NSE) rulings involving Spring, Delamar, Dry Lake, and Cave valleys, Stanka Consulting, LTD prepared a report to document the quantification of the estimated committed groundwater and spring resources within the White River Flow System (Stanka, 2017). This memo is being prepared to document the rational for which springs may be included in their analysis for quantification purposes.

2.0 CLASSIFICATION OF SPRINGS

Stanka Consulting is using the NSE modified version of the Excel Solver (NSE Exhibit 135) to determine the water available for appropriation within the White River Flow System. The NSE revised solver established water budgets that include recharge and discharge with the discharge being determined by evapotranspiration (ET) in the groundwater discharge area.

For the purposes of water-right classification, springs are classified as "groundwater" or "surface water" based on the source of their discharge. A spring which issues on the valley floor and within the groundwater discharge area, and therefore contributes to the ET of a basin, is considered to discharge groundwater. If water rights appropriate spring flow in the groundwater discharge area then they should be considered groundwater resources in the White River Flow System for accounting purposes. The reason these springs can be considered ground water allocations for this analysis is that the flow from the springs supported the plant ET that was mapped to quantify the water available in the WRFS.

The extent of the potential groundwater discharge areas used in the water-balance method were delineated using information from previous mapping efforts, satellite imagery and field reconnaissance. Further details on the groundwater discharge areas are provided in Burns and Drici (2011, SNWA Exhibit 258 and SNWA Exhibit 452). The extent of the ET areas are found as a geographic information system shapefile in SNWA Exhibit 452 and are shown on Figure 1.



Source: Burns and Drici (2011, SNWA Exhibit 452).

Figure 1
Groundwater Discharge Area Map

3.0 REFERENCES

Burns, A.G., and Drici, W., 2011, Hydrology and water resources of Spring, Cave, Dry Lake, and Delamar valleys, Nevada and vicinity: Presentation to the Office of the Nevada State Engineer: Southern Nevada Water Authority, Las Vegas, Nevada.

Stanka, M.A., 2017, Committed groundwater resources within the White River Flow System: Presentation to the Office of the Nevada State Engineer: Stanka Consulting, LTD., Carson City, Nevada