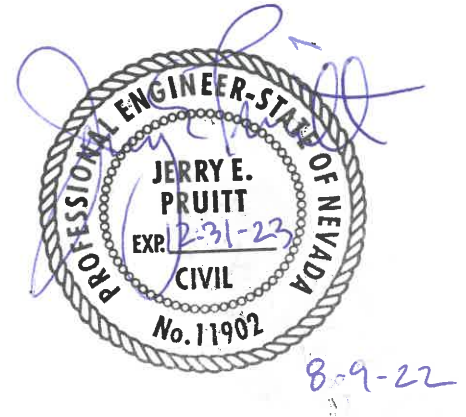


Update to the  
Technical Drainage Study  
for  
**Balmoral Estates**  
**(APN 125-24-203-022)**  
**100220-PMP**

**Prepared For**

Gary Briggs  
Gold Rose Construction  
9775 Severence Lane  
Las Vegas, NV 89149

Gary@goldroseconstruction.com



**Prepared By**



**WOOD RODGERS**  
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

August 2022

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL  
**DRAINAGE STUDY INFORMATION FORM**

Name of Development: Balmoral Estates Date: 08/09/22

Location of Development: a) Descriptive (Cross Streets) North/South: Bradley Road

East/West: Deer Springs Way

b) Section: 24 Township: 19S Range: 60E

c) APN : 125-24-203-022

Name of Owner: Falcon Crest Properties LLC

Telephone No.: (310) 276-4441 Fax No.: \_\_\_\_\_ E-Mail Address: Joseph@plpinc.us

Address: 1960 Carla Ridge, Beverly Hills, CA 90210

Contact Person-Name: Jesse J. Patchett, P.E., CFM Telephone No.: (702) 790-5530

\* E-Mail Address: jpatchett@woodrogers.com Fax No.: (916) 341-7767

Firm: Wood Rodgers, Inc.

Address: 8345 W. Sunset Road, Suite 150 Las Vegas, NV 89113

Type of Land Development/Land Disturbance Process:

|                          |                  |                                     |                          |                          |                              |
|--------------------------|------------------|-------------------------------------|--------------------------|--------------------------|------------------------------|
| <input type="checkbox"/> | Rezoning         | <input type="checkbox"/>            | Subdivision Map          | <input type="checkbox"/> | Clearing and Grading Only    |
| <input type="checkbox"/> | Parcel Map       | <input type="checkbox"/>            | Planned Unit Development | <input type="checkbox"/> | Other (Please specify below) |
| <input type="checkbox"/> | Large Parcel Map | <input checked="" type="checkbox"/> | Building Permit          | <input type="checkbox"/> |                              |

1. Total Owned Land Area: At Site:  $\pm 2.01$  Ac Being Developed/Disturbed:  $\pm 2.01$  Ac

2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes\*\* ☒ No

3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ Yes\*\* ☒ No

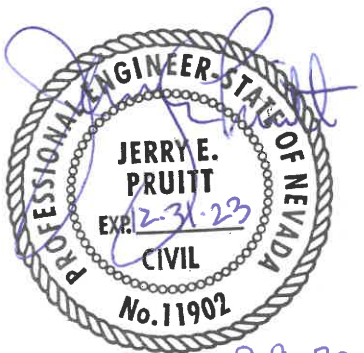
4. Proposed type of development (Residential, Commercial, Etc.): Residential

5. Approximate upstream land area which drains to the subject site:  $\pm 0.24$  sq mi

6. Has the site drainage been evaluated in the past? ☐ YES ☒ NO If yes, please identify documentation: \_\_\_\_\_

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Deer Springs and Bradley

8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over the subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.

**\*New Required Field**

**\*\*Review and concurrence of the Clark County Regional Flood Control District is required.**

| Local Entity File No. | Revision | Date |
|-----------------------|----------|------|
|                       |          |      |
|                       |          |      |
|                       |          |      |

REFERENCE:

Wood Rodgers Project No. 3810005

STANDARD FORM 1



August 9, 2022

Mr. Albert Sung, P.E.  
Flood Control Project Engineer  
Department of Public Works  
495 S. Main St.  
Las Vegas, NV 89101

**SUBJECT: Technical Drainage Study Update for Balmoral Estates  
(DS5542A)**

Dear Mr. Sung,

The purpose of this letter is to serve as the **Update** to subject project. The *Technical Drainage Study for Balmoral Estates* (hereinafter referred to as the **TDS**) was conditionally approved by CLV on May 17, 2022. The **Update** included herein, is intended to supersede data contained in the previous study.

Per the conditional approval of the **TDS**, the half-street improvements for Deer Springs Way and Bradley Road have been revised. The proposed revisions include:

- Revised hydraulic street sections for the Developed and Future Condition analysis to include half-street improvements.
- Provided drop inlet, lateral, and manhole at the northwest corner along Bradley Road to collect and convey nuisance flows to the existing 18-inch RCP storm drain in Bradley Road.
- Provided drop inlet and lateral at the northwest corner along Deer Springs Way to be stubbed for future connection by others to the storm drain in Deer Springs Way.
- Provided a sidewalk underdrain at the northwest corner along Deer Springs Way to convey flows from the 10-foot public drainage easement to the Deer Springs Way right of way.

There is a CLV Public Works Improvement project (drawing no. 208-609) that will revise the intersection of Deer Springs Way and Bradley Road to a roundabout. The improvements include revision to the storm drain in Deer Springs Way. The Update improvements will be constructed prior to or concurrently with the construction of the CLV Public Works project. The Improvement Plans have been updated to reflect the future revised intersection layout by others. Pertinent reference material has been included in **Appendix C**. Please note the onsite improvements remain unchanged from the approved **TDS**.

## **HYDRAULICS**

### **Developed Condition Hydraulic Calculations**

The developed condition Hydraulic Sections 1 and 2 have been revised to include the half-street improvements for the north half of Deer Springs Way and west half of Bradley Road. In the

existing condition, Deer Springs Way and Bradley Road do not meet dry lane criteria; therefore, developed conditions do not meet dry lane criteria.

The revised street flow data has been presented below in **Table 1** for the developed condition. **Figure 5** in **Appendix A** shows the locations of the cross sections corresponding to the calculations in the table below. The hydraulic calculations can be found in **Appendix B**.

| <b>TABLE 1 – Summary of Developed Condition Flow Depth Analysis</b> |                        |                        |                        |                          |                                                  |
|---------------------------------------------------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------------------------------|
| <b>Section</b>                                                      | <b>Q<sub>100</sub></b> | <b>D<sub>100</sub></b> | <b>V<sub>100</sub></b> | <b>D*V<sub>100</sub></b> | <b>Notes</b>                                     |
| 1                                                                   | 111                    | 1.06                   | 3.42                   | 3.63                     | Deer Springs Way (Southeast end of site) at CPD1 |
| 2                                                                   | 146                    | 0.99                   | 4.48                   | 4.44                     | Bradley Road (Southeast end of site) at CPD2     |

## Future Condition Hydraulic Calculations

The future condition Hydraulic Sections 1 and 2 have been revised to include the half-street improvements for the north half of Deer Springs Way and west half of Bradley Road.

The revised street flow data has been presented below in **Table 2** for the future condition. **Figure 6** in **Appendix A** shows the locations of the cross sections corresponding to the calculations in the table below. The hydraulic calculations can be found in **Appendix B**.

| <b>TABLE 2– Summary of Future Condition Flow Depth Analysis</b> |                        |                        |                        |                          |                                                  |
|-----------------------------------------------------------------|------------------------|------------------------|------------------------|--------------------------|--------------------------------------------------|
| <b>Section</b>                                                  | <b>Q<sub>100</sub></b> | <b>D<sub>100</sub></b> | <b>V<sub>100</sub></b> | <b>D*V<sub>100</sub></b> | <b>Notes</b>                                     |
| F1                                                              | 107                    | 0.89                   | 3.38                   | 3.01                     | Deer Springs Way (Southeast end of site) at CPF1 |
| F2                                                              | 135                    | 0.92                   | 4.27                   | 3.93                     | Bradley Road (Southeast end of site) at CPF2     |

## Storm Drain Facilities

A 5-foot Type DM2 Modified Drop Inlet, 40 feet of 18-inch RCP lateral, and a 60-inch Type IA manhole have been proposed in Bradley Road at approximate Station 16+58. The proposed storm drain improvements will collect and convey nuisance flows to the existing 18-inch RCP storm drain in Bradley Road before the roundabout.

A 5-foot Type DM2 Modified Drop Inlet and a stubbed 18-inch RCP lateral have been proposed on the northeast corner in Deer Springs Way at approximate Station 18+94. The proposed storm drain improvements will be stubbed and plugged for future connection to the future storm drain by others in Deer Springs Way. The storm drain improvements have been designed to collect and convey nuisance flows in Deer Springs Way before the roundabout.

There is a 10-foot Public Drainage Easement that conveys onsite improvement flows to the Deer Springs right of way. A sidewalk underdrain has been proposed at the outlet of the drainage easement to convey onsite flows to the proposed inlet in Deer Springs Way.

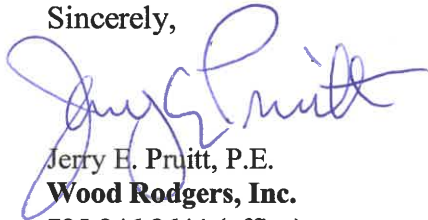
Technical Drainage Study Update for Balmoral Estates  
(DS5542A)

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In general, the revisions have minor impacts and do not change the design concept presented and approved with the **TDS**. The proposed revisions will not adversely impact adjacent or downstream properties and do not alter flow paths downstream of the site.

If you have any comments or questions, please do not hesitate to contact me at 702-704-2489.

Sincerely,



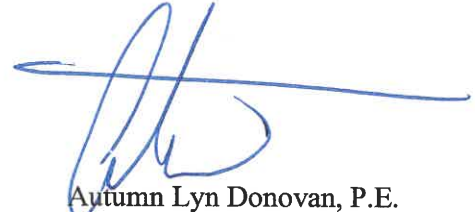
Jerry E. Pruitt, P.E.

**Wood Rodgers, Inc.**

725.246.2644 (office)

702-704-2489 (cell)

jpruitt@woodrogers.com



Autumn Lyn Donovan, P.E.

**Wood Rodgers, Inc.**

702.623.3426

adonovan@woodrogers.com

## **TABLE OF APPENDICES**

### **APPENDIX A**

- Figure 5 – Developed Condition Drainage Basin Map
- Figure 6 – Future Condition Drainage Basin Map
- 

### **APPENDIX B (Hydraulics)**

- Hydraulic Section Analysis
  - Developed Condition
    - Section 1
    - Section 2
  - Future Condition
    - Section F1
    - Section F2

### **APPENDIX C (Reference Material)**

- “Roundabout at Deer Springs Way/Bradley Road” by G.C. Wallace Inc., dated April, 2022.

### **APPENDIX D (Plans and Details)**

- Civil Improvement Plans