Rec'd: 3/9/11

DS 4432-1

K-34

$100

UPDATE TO THE TECHNICAL DRAINAGE STUDY FOR BARCELONA – UNIT 2 @ THE PASEOS (PARCEL J, SUMMERLIN VILLAGE 23A)

62023-971

March 2011

Prepared for:

The Howard Hughes Corporation
10000 W. Charleston Blvd, Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4200
Fax: (702) 791-4450

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

UPDATE TO THE TECHNICAL DRAINAGE STUDY FOR BARCELONA – UNIT 2 @ THE PASEOS (PARCEL J, SUMMERLIN VILLAGE 23A)

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Prepared by:

G. C. Wallace Companies
1555 S. Rainbow Blvd
Las Vegas, Nevada 89146
Phone: (702) 804-2000
Fax: (702) 804-2299

62023-971

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Barcelona - Unit 2 @ The Paseos (Parcel J, Summerlin Village 23A) Date: March 2011

Location of Development a) Descriptive (Cross Streets) North/South: Desert Foothills Drive

East/West: Alta Drive

b) Section: 34 Township: 20 S Range: 59 E

c) APN: 137-34-601-003

Name of Owner: The Howard Hughes Corporation

Telephone No.: (702) 791-4200 Fax No. (702) 791-4450 E-Mail Address: Not available

Address: 10000 W. Charleston Blvd Ste. 200; Las Vegas, Nevada 89135

Contact Person-Name: Rachael Dennis **Telephone No.:** (702) 804-2248

* **E-Mail Address:** rdennis@gcwallace.com **Fax No.:** (702) 804-2299

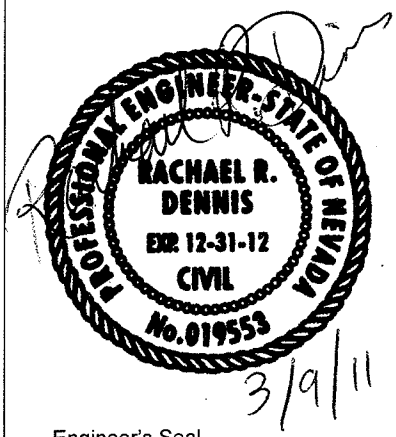
Firm: G. C. WALLACE COMPANIES

Address: 1555 S. Rainbow Blvd; Las Vegas, NV 89146

Type of Land Development/Land Disturbance

☐	Rezoning	☐	Subdivision Map	☐	Clearing and Grading Only
☐	Parcel Map	☒	Planned Unit Development	☒	Other (Please specify below)
☐	Large Parcel Map	☐	Building Permit	Technical Drainage Study Update	

1. Total Owned Land Area: At Site: +/- 20.5 acres Being Developed/Disturbed: +/- 8.4 acres
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: Ø acres
6. Has the site drainage been evaluated in the past? ☒ **Yes** ☐ **No** If yes, please identify documentation: *Technical Drainage Study for Barcelona - Unit 2 @ The Paseos (Parcel J, Summerlin Village 23A), 2010, GCW; Update #1 to the Technical Drainage Study for Barcelona @ The Paseos, Parcel J, Summerlin Village 23A, 2005, Carter Burgess; Technical Drainage Study for Summerlin Village 23A Unit 1 Improvements, 2002, GCW; Technical Drainage Study for Summerlin Village 23A - Rough Grading, 2002, GCW; Conceptual Drainage Study for Summerlin Village 23A, 2002, GCW.*
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing private storm drain in Unit 1 at Amaryllis Pride Lane and Paseo Breeze Drive
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:

STANDARD FORM 1

UPDATE TO THE TECHNICAL DRAINAGE STUDY FOR BARCELONA – UNIT 2 @ THE PASEOS (PARCEL J, SUMMERLIN VILLAGE 23A)

62023-971

March 2011

Prepared for:

The Howard Hughes Corporation
10000 W. Charleston Blvd, Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4200
Fax: (702) 791-4450

G. C. WALLACE, INC.
ENGINEERS PLANNERS SURVEYORS

G. C. WALLACE, INC.

Writer's Contact Information:

702.804.2248

62023-971

March 9, 2011

Albert Y. Sung, PE
Flood Control Project Manager
City of Las Vegas - Land Development Services
Department of Public Works
731 South Fourth Street
Las Vegas, Nevada 89101

Re: Technical Drainage Study for Barcelona – Unit 2 @ The Paseos (Parcel J, Summerlin Village 23A)

Dear Mr. Sung:

The purpose of this letter is to serve as the first update to the Technical Drainage Study for the subject project. The *Technical Drainage Study for Barcelona - Unit 2 @ The Paseos (Parcel J, Summerlin Village 23A)* (hereinafter referred to as the Unit 2 Study) was originally approved by the City of Las Vegas Public Works Department (CLV) on September 10, 2010, with concurrence issued from the Clark County Regional Flood Control District (CCRFCD) on September 15, 2010. This update includes grading plan revisions to the walls along the western boundary of the site. The grading plan revisions include lowering the proposed finished grade along the western boundary to minimize the need for sloping along the backside of the lots. As described in the original study, interim conditions flows in the existing swale along the western boundary of the project will be contained within the swale during the interim conditions' 100-year storm event. The maximum 100-year depth of flow in the existing swale during the interim condition is 1.82 feet as referenced from the original study. The finished floor elevations for the lots adjacent to the existing swale have been set above the adjacent depth of flow. Since the flows are contained within the swale, the eastern bank of the swale adjacent to the western boundary of the site provides flood protection for the adjacent lots. Where the eastern bank of the existing swale does not provide at least 18-inches of freeboard above the depth of flow, a solid grouted wall has been provided to protect those lots. A copy of the referenced Western Swale interim conditions normal depth calculation has been included in the Appendix. The grading plans provided herewith will supersede those of the Unit 2 Study and serve to update the previously approved study. Copies of the approval letters and zoning/planning conditions have been included in the Appendix. It should be noted that no hydrologic or hydraulic calculations have been revised with this update. In general, the proposed revisions do not pose any negative impacts on downstream facilities and development.

If you have any questions or require additional information, please contact our office at 804-2000.

Cordially,
G. C. WALLACE, INC.

Rachael R. Dennis, PE
Project Engineer
Flood Control Division

c: Jerry Pruitt, GCW
Ryan Belsick, GCW
Josh Johnson, GCW

BARCELONA @ THE PASEOS, PARCEL J, SUMMERLIN V23A (UNIT 2)
APPENDIX LAYOUT

1. Technical Drainage Study for Barcelona – Unit 2 @ The Paseos (Parcel J, Summerlin Village 23A)
    a. CCRFCD Concurrence
    b. CLV Approval Letter

2. Zoning and Planning Conditions (TMP -387-785)

3. Update #1 to the Technical Drainage Study for Barcelona @ The Paseos, Parcel J, Summerlin Village 23A
    a. Normal Depth Calculation for swale along western wall

REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

Larry Brown
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City of Las Vegas

Debra March
City of Henderson

Steven D. Ross
City of Las Vegas

Mayor Roger Tobler
City of Boulder City

September 15, 2010

Mr. Robert Welch, P.E., CFM
City of Las Vegas Public Works
731 S. 4th Street
Las Vegas, NV 89101

DISTRICT CONCURRENCE: **BARCELONA - UNIT 2 @ THE PASEOS (PARCEL J. SUMMERLIN VILLAGE 23A) (DS4432B) (RFCD No. 10-7933)**

Dear Mr. Welch:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated July 16, 2010, and Addendum No. 1 dated August 31, 2010 for above-mentioned project as submitted by G.C. WALLACE COMPANIES. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated September 10, 2010.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage*.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G.C. WALLACE COMPANIES may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Abigail Mayrena, P.E., CFM
Senior Engineer

_____
Andrew R. Trelease, P.E., CFM
Principal Civil Engineer

AM:ART:sa

c: Rachael R. Dennis, P.E., G.C. Wallace Companies

P:\Letters and Memos\Local Drainage\Land Development & Drainage\Concurrence Letters\2010\Sept 10\59-34-20-GCW.doc

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 685-0000 • FAX: (702) 685-0001
Website: *http://www.regionalflood.org*

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: September 10, 2010
TO: **Land Development Services** Department of Public Works				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Barcelona – Unit 2 @ The Paseos (Parcel J, SMRLN V23A)**			**COPIES TO:** G. C. Wallace, Inc.
Cross Streets:	SWQ of Alta Drive & Desert Foothills Blvd.			Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4432B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-34-601-003			CCRFCD
Zoning Action:	TMP-38785			
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	7/16/2010	7/30/2010	Not Approved	$400.00	149079: $400
2nd Submittal	8/31/2010	9/10/2010	See Comments Below	$400.00	152652: $400
			TOTAL FEES (LDDRS):	**$800.00**	---

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. **This drainage study is acceptable in concept**; however, *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District* (CCRFCD) has issued a letter of concurrence. The Engineer should contact the CCRFCD to confirm that they have begun their review.
2. All private streets must be labeled on the Final Map as Public Utility Easements (P.U.E.), City of Las Vegas Sewer Easements and Public Drainage Easements to be privately maintained by the Homeowners Association.
3. All drainage easements must be common lots and public drainage easements to be privately maintained by the Homeowners Association to be labeled on the grading plans and to be dedicated as such in the Final Map.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas ha[illegible] planting. For more information, incluc http://ndep.nv.gov/bwpc/storm01.htm

END OF REMARKS
ays

Post-it® Fax Note 7671	Date 9/10/10	# of pages ▶ 2
To Rachael Dennis	From Albert SUNG	
Co./Dept. GCW	Co. CLV	
Phone #	Phone # 229-2001	
Fax # 804-2299	Fax #	

PLANNING & DEVELOPMENT
DEVELOPMENT SERVICES CENTER
731 S. Fourth Street
Las Vegas, NV 89101
Voice: 702-229-6301
Fax: 702-474-0352
TTY 702-386-9108
www.lasvegasnevada.gov

August 27, 2010

Ms. Julie Cleaver
The Howard Hughes Corporation
10000 West Charleston Boulevard, Suite #200
Las Vegas, Nevada 89135

RE: TMP-38785 - TENTATIVE MAP - VILLAGE 23A PARCEL J UNIT 2 – BARCELONA
PLANNING COMMISSION MEETING OF AUGUST 26, 2010

Dear Ms. Cleaver:

Your request for a Tentative Map FOR A 34-LOT SINGLE-FAMILY RESIDENTIAL SUBDIVISION on 8.35 acres adjacent to the south side of Alta Drive, between Desert Foothills Drive and Fox Hill Drive (APN 137-34-601-003), P-C (Planned Community District) Zone [SF3 (Single Family Detached) Summerlin West Land Use Designation], Ward 2 (Wolfson), was considered by the Planning Commission on August 26, 2010.

The Planning Commission voted to ***APPROVE*** your request, subject to the following:

Planning and Development

1. Approval of the Tentative Map shall be for no more than four (4) years. If a Final Map is not recorded on all or a portion of the area embraced by the Tentative Map with four (4) years of the approval of the Tentative Map, this action is void.

2. Street names must be provided in accordance with the City's Street Naming Regulations.

3. In conjunction with creation, declaration and recordation of the subject common-interest community, and prior to recordation of the Covenants, Codes and Restrictions ("CC&R"), or conveyance of any unit within the community, the Developer is required to record a Declaration of Private Maintenance Requirements ("DPMR") as a covenant on all associated properties, and on behalf of all current and future property owners. The DPMR is to include a listing of all privately owned and/or maintained infrastructure improvements, along with assignment of maintenance responsibility for each to the common interest community or the respective individual property owners, and is to provide a brief description of the required level of maintenance for privately maintained components. The DPMR must be reviewed and approved by the City of Las Vegas Department of Field Operations prior to recordation, and must include a statement that all properties within the community are subject to assessment for all associated costs should private maintenance obligations not be met, and the City of Las Vegas be required to provide for said maintenance. Also, the CC&R are to include a statement of obligation of compliance with the DPMR. Following recordation, the Developer is to submit copies of the recorded DPMR and CC&R documents to the City of Las Vegas Department of Field Operations.

Mayor
Oscar B. Goodman
City Council
Gary Reese
(Mayor Pro Tem)
Steve Wolfson
Lois Tarkanian
Steven D. Ross
Ricki Y. Barlow
Stavros S. Anthony
City Manager
Elizabeth N. Fretwell

4. All development is subject to the conditions of City Departments and State Subdivision Statutes.

Public Works

5. A Homeowner's Association shall be established to maintain all perimeter walls, private roadways, landscaping and common areas created with this development. All landscaping shall be situated and maintained so as to not create sight visibility obstructions for vehicular traffic at all development access drives and abutting street intersections.

6. The private streets must be labeled on the Final Map for this site as Public Utility Easements (P.U.E.), City of Las Vegas Sewer Easements and Public Drainage Easements to be privately maintained by the Homeowner's Association.

7. The Special Improvement District section of the Department of Public Works must be contacted prior to the recordation of a Final Map or the issuance of any building permits, whichever may occur first. An apportionment report will be prepared following recordation of the Final Map to recalculate and/or redistribute all assessments of record on this site.

8. A Drainage Plan and Technical Drainage Study must be submitted to and approved by the Department of Public Works prior to the issuance of any building or grading permits, submittal of any construction drawings or the submittal of a Map subdividing this site, whichever may occur first. Provide and improve all drainageways recommended in the approved drainage plan/study. The developer of this site shall be responsible to construct such neighborhood or local drainage facility improvements as are recommended by the City of Las Vegas Neighborhood Drainage Studies and approved Drainage Plan/Study concurrent with development of this site.

9. Site development to comply with all applicable conditions of approval for the Summerlin Village 23A Tentative Map and all other subsequent site-related actions.

10. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Specific design and construction details relating to size, type and/or alignment of improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. No deviations from adopted City Standards shall be allowed unless specific written approval for such is received from the City Engineer prior to the recordation of a Final Map or the approval of subdivision-related construction plans, whichever may occur first. Approval of this Tentative Map does not constitute approval of any deviations. If such approval cannot be obtained, a revised Tentative Map must be submitted showing elimination of such deviations.

This action by the Planning Commission on **August 26, 2010** is final unless a written appeal is filed with the City Clerk within ten days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests please access http://www.lasvegasnevada.gov/CheckStatus/DevelopmentApp.htm, or contact the Department of Planning and Development at 702.229.6301 after ***September 7, 2010***. No building permits or business licenses related to these items shall be issued prior to the expiration of the required ten day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,

Steve Gebeke
Planning Supervisor
Case Planning Division

SG:clb

cc: Mr. Josh Johnson
GC Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, Nevada 89146

SWALE - WESTERN WALL (Q100) SLOW SLOPE

Worksheet for Irregular Channel

** Referenced from UP#1 to TDS for Barcelona @ The Paseos 10/05 (included in last Submittal)

Project Description	
Worksheet	SWALE - WESTERN WALL (Q100) SLOW SLOPE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	1.16 %
Discharge	113.00 cfs

Options	
Current Roughness Method	Improved Lotter's Method
Open Channel Weighting Method	Improved Lotter's Method
Closed Channel Weighting Method	Horton's Method

Results	
Mannings Coefficient	0.030
Water Surface Elevation	1.82 ft
Elevation Range	0.00 to 4.16
Flow Area	19.0 ft²
Wetted Perimeter	16.18 ft
Top Width	15.47 ft
Actual Depth	1.82 ft
Critical Elevation	1.77 ft
Critical Slope	1.31 %
Velocity	5.94 ft/s
Velocity Head	0.55 ft
Specific Energy	2.37 ft
Froude Number	0.94
Flow Type	Subcritical

Calculation Messages:
Water elevation exceeds lowest end station by 0.15173596 ft.

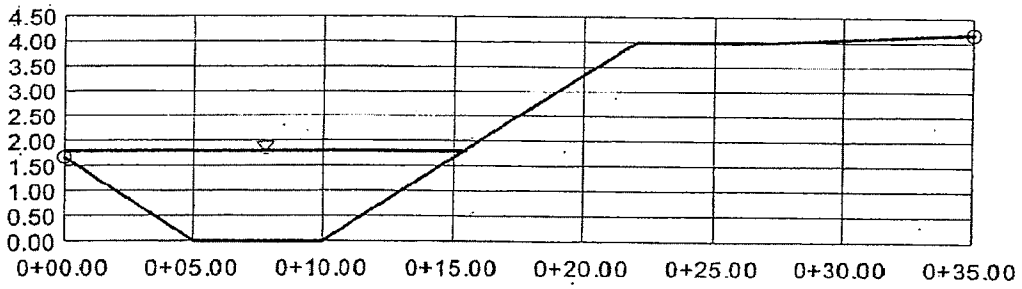
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+35.00	0.030

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	1.67
0+05.00	0.00
0+10.00	0.00
0+22.00	4.00
0+27.00	4.00
0+35.00	4.16

SWALE - WESTERN WALL (Q100) SLOW SLOPE
Cross Section for Irregular Channel

Project Description	
Worksheet	SWALE - WESTERN WALL (Q100) SLOW SLOPE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.030
Slope	1.16 %
Water Surface Elevation	1.82 ft
Elevation Range	0.00 to 4.16
Discharge	113.00 cfs



V:2.0
H:1
NTS

LETTER OF TRANSMITTAL

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

G. C. WALLACE, INC.
G. C. WALLACE OF CALIFORNIA, INC.
G. C. WALLACE HOLDINGS, INC.

Writer's Contact Information:

702.804.2000

Project No.: 62023-971
Date: March 9, 2011

To: **City of Las Vegas**
City of Las Vegas - Flood Control Section
Department of Public Works
333 N. Rancho Drive
Las Vegas, Nevada 89106

Attention: Albert Sung, PE

Subject: **Technical Drainage Study for Barcelona - Unit 2 (Parcel J, Summerlin Village 23A)**

Sent Via: Hand Delivery

Items being sent:

One (1) Copy – Update to Subject Study
One (1) Copy – Revised Improvement Plans (bound)
One (1) Copy – Stamped and Signed Standard Form 1 (bound)
Check (#99063) for $100

These items are submitted:

- ☐ At your request
- ☐ For your approval
- ☒ For your review and comments
- ☐ For your action
- ☒ For your files
- ☐ For your information

Acknowledgment of receipt:

☒ **Required**

Received by: _____
Date: _____
Time: _____

Remarks:

Cordially,

G. C. WALLACE COMPANIES

Rachael R. Dennis, PE
Project Engineer
Flood Control Division

rrd

Copies to: Jerry Pruitt, GCW
Ryan Belsick, GCW
Josh Johnson, GCW

** Duplicate Receipt **

City of Las Vegas

Development Services Center

731 South Fourth Street

Las Vegas, NV 89101

03/09/2011 14:34 Trn 164253
Cashier 890381

PRJ Permit # DS4432-1	$100.00
Subtotal	**$100.00**
Tax	$0.00
Total	**$100.00**
Received CHECK	$100.00
Check # 99063	
Change	$0.00

For questions related to this receipt call

702-229-6240