

DS #: 4521

APN: 138-24-213-001

901 Trophy Hills (Tearney Hills unit 3) -
PROJECT: update #2

SUBMITTAL: 3rd

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____



CITY OF LAS VEGAS		DATE:
INTER-OFFICE MEMORANDUM		September 17, 2012
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:	
	901 Trophy Hills (Tournament Hills Unit 3) – Update #2	
Cross Streets:	NWQ of Summerlin Pkwy. & Rampart Blvd.	
File Number:	F:\Depot\DSMemos\DS4521C.doc	
Parcel Number:	138-29-213-001	
Zoning Action:	FMP-40979	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X
COPIES TO: McCay Engineering, LLC Trophy Hills Residence Trust Bart Anderson, P.E., DevCo		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1 st Submittal	2/16/2011	3/2/2011	Not Approved	\$400.00	162890: \$400
2 nd Submittal	4/14/2011	4/25/2011	Approved	\$400.00	166632: \$400
3 rd Submittal	9/6/2012	9/17/2012	See Comments Below	\$400.00	295348: \$400
TOTAL FEES (LDDRS):				\$1,200.00	----

REMARKS:

3rd Submittal: Update #2 for Trophy Hills Drive Re-Alignment; Removal of Knuckle in Players Club Drive and Onsite Expansion. Drainage Update #2 done by a different engineer

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

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

1. City of Las Vegas does not allow HDPE pipe in public right-of-ways or public drainage easements. City of Las Vegas only allow the use of HDPE storm drain pipe for privately owned and privately maintained storm drain system, which serve and are located exclusively on private property. Any proposed HDPE storm drain pipe must also meet all design criteria established by the Clark County Regional Flood Control District and must be installed per Clark County Regional Transportation Commission Uniform Standard Drawings and Specifications.

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 have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Amendment and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

END OF REMARKS

ays

T/R/S: T20S/R60E/29
AREA L-29

McCAY ENGINEERING

11700 W. CHARLESTON BLVD., SUITE 170-298
LAS VEGAS, NV 89135
702-860-3897

UPDATE #2 TO THE TECHNICAL DRAINAGE STUDY FOR TOURNAMENT HILLS – UNIT 3 A.K.A 901 TROPHY HILL

CITY OF LAS VEGAS

September 6, 2012



McCAY ENGINEERING

PREPARED FOR:

**THE TROPHY HILLS RESIDENCE TRUST
300 FIRST AVENUE, SUITE 1
NEEDHAM, MA 02494**



McCay ENGINEERING

11700 W. CHARLESTON BLVD.
SUITE #170-298
LAS VEGAS, NV 89135
JMCCAY@CENTURYLINK.NET
(702) 860-3897

Date: September 6, 2012

Albert Sung, P.E.
Flood Control
City of Las Vegas Public Works
731 S. Fourth Street
Las Vegas, Nevada 89101

**RE: UPDATE #2 TO THE TECHNICAL DRAINAGE STUDY FOR TOURNAMENT HILLS – UNIT 3 –
LOTS 3, 4, AND 5 A.K.A. 901 TROPHY HILLS**
Job No. 12019

Dear Mr. Sung:

McCay Engineering is pleased to submit two copies of the Update to the Technical Drainage Study for your review and approval for the above-mentioned project. The site is recorded on the Clark County Assessor's maps as APN 138-29-213-001 (Formerly APN's 138-29-212-003, 004, and 005). See *Figure 1, Vicinity Map*.

This update is in regards to the expansion of the project site. Additional land has been acquired from Tournament Players Club Golf Course. In addition Trophy Hills roadway alignment has been modified as well as the abandonment of the knuckle on Players Club. The median islands have been removed and the western portion of the roadway has been shifted to meet the east, thereby increasing the site area along the front of the project. The roadway civil improvement plans "Trophy Hills Drive Re-Alignment" have been previously completed by Desert Oak Development and is not a part of this update. The site area has been increased from 2.52-acres to 3.47-acres.

The original drainage study for the development was completed by G.C. Wallace and was approved on September 11, 1992. The study is on file with the City of Las Vegas as DS901, copies of reference information have been provided in the Appendix. In addition, Wright Engineers completed the Update to the drainage study for the redevelopment of Lots 3, 4, and 5. The study is on file at the City of Las Vegas as DS4521, approved on April 25, 2011.

Street Flow

Figure 6 of the original drainage study shows the drain patterns for Tournament Hills Unit 3. Point A quantified the 100-year street flow as 44cfs (17cfs, 10-year). The subject site lies at the upper reaches of the basin. Players Club Drive, along the frontage of the subject site, will only convey a small portion of the 10 and 100-year street flow. A conservative approximation determines that only 25% of the overall basin will be generated/conveyed within Players Club, along the frontage of the subject site. Further support for this conservative approximation is identified in the Update provided by Wright Engineers, as nearly the entire subject site drains to Tournament Hills, north of the highpoint, thereby directing the flow away from Point 'A'. A flow depth calculation, utilizing 11 cfs (44cfs * 25%), has been completed for Players Club Drive at the

minimum existing street slope along the frontage of the property (2.65%). The resulting depth is 0.36-feet. The calculation is provided in the Appendix of this Update.

The building finished floor has been elevated from 2719-feet to 2720-feet, which lies partially below the existing street elevation of Players Club Drive. The proposed site wall and site grading along Players Club Drive is used to protect the site to 18-inches above the existing top of curb elevation. This is well over the twice the depth of flow. The bottom 2 courses of the proposed site wall will be solid grouted along Players Club Drive. The finished floor is more than 18 inches above the top of curb elevation in Trophy Hills Drive; therefore additional flood protection is not needed. An underground parking garage is also proposed which has been set at 2705-feet.

Onsite Flow

As mentioned above, the site area has increased from 2.52-acres to 3.47-acres. Added land from the surrounding area has decreased the overall Curve Number of our site and street frontage as the area of imperviousness has been decreased. This is aided by a larger pool, additional landscape areas and reduced roadway asphalt. We anticipate that the quantity of storm flow in Tournament Hills will remain as previously determined by Wright Engineering.

The onsite storm drain system has been slightly modified to match the updated siteplan. The storm drain system has been adequately sized to handle the 100-year onsite storm flow. The discharge point of the system has been shifted east to meet the new Tournament Hills alignment. We have maintained the use of a 4-foot concrete outlet structure with sidewalk underdrains, as previously approved. Overflow paths have been provided to protect the finished floor in the case the onsite storm drain system becomes clogged.

According to Figure F-25 of the 2008 CCRFCD'S *Master Plan Update*, no proposed or constructed regional facilities are located adjacent to the project site. Descriptions of nearby facilities are shown on the *Master Plan Update* on Figure 2, *Flood Control Facilities* (Appendix A).

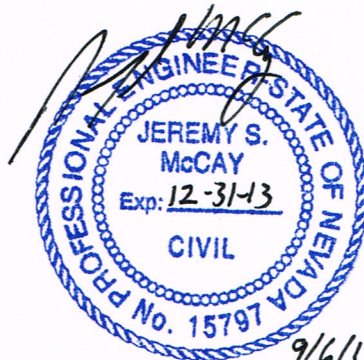
According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community Panel Number 32003C 2145E, Clark County, Nevada, effective September 27, 2002, the site lies within a FEMA designated Zone "X". A Zone "X" is described as an area determined to be outside the 500-year floodplain. See Figure 3, *FEMA Map*.

According to the *City of Las Vegas Flood Control Facilities Inventory and City Wide Hydrology Analysis, 1997* no proposed or constructed local facilities are located adjacent to the project site. Descriptions of nearby facilities are shown on the Figures 5 and 6 (Appendix A).

If you have any questions or comments regarding this project, please do not hesitate to contact this office at (702) 860-3897.

Sincerely,
McCay Engineering

Jeremy S. McCay, P.E.
Principal



HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: 901 Trophy Hills Date: September 6, 2012

Location of Development: a) Descriptive (Cross Streets) North/South: Trophy Hills Drive
East/West: Players Club Drive
b) Section: 29 Township: 20 S Range: 60 E
c) APN: 138-29-213-001, FORMERLY 138-29-212-003, 004, & 005

Name of Owner: The Trophy Hills Residence Trust

Telephone No.: 781-707-2500 Facsimile No.: _____ Email Address: jspurling@trailmarkinc.com

Address: 300 First Avenue, Suite 1 Needham MA 2494

Contact Person Name: Jeremy S. McCay Telephone No: (702) 860-3897

E-mail Address: jmccay@centurylink.net

Firm: McCay Engineering, LLC

Address: 11700 W. Charleston Blvd, Suite 170-298, Las Vegas, NV 89135

Type of Land Development/Land Disturbance Process:

☐
☐
☐

Rezoning
Parcel Map
Large Parcel Map

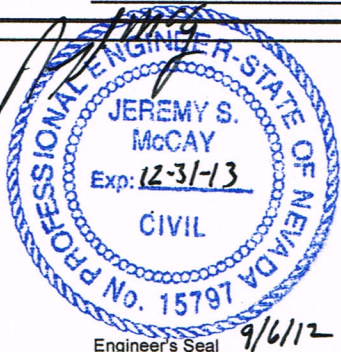
☐
☐
☒

Subdivision Map
Planned Unit Development
Building Permit

☐
☐

Clearing and Grading Only
Other (Please specify below)

1. Total Owned Land Area: At Site: 3.47 +/- ac Being Developed/Disturbed: 3.47 +/- 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? < 1 ac
6. Has the site drainage been evaluated in the past? ☒ YES ☐ NO If yes, please identify documentation:
TDS for Tournament Hills Unit III, G.C. Wallace, 1992, DS901, and Update #1 by Wright Engineers, 2011, DS4521
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:
The site will drain to Trophy Hills Drive.
8. Briefly describe your proposed schedule for the subject project: As soon as possible



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.

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

Local Entity File No. _____

Revision	Date

Reference: **McCay Engineering, LLC. Job No: 12019**

STANDARD FORM 1



CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

The following checklist is intended as a supplemental guide for the engineer preparing a Technical Drainage Study submittal to the City of Las Vegas. This supplement focuses on requirements specific to the City of Las Vegas. The requirements presented are in addition to the Clark County Regional Flood Control District (CCRFCD) Manual Standard Form 2. The listed items are the minimum information required prior to the City performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the CCRFCD Hydrologic Criteria and Drainage Design Manual (Design Manual).

An appointment must be made to preview this checklist in conjunction with CCRFCD Standard Form 2 prior to the City accepting a new drainage study for review. The engineer must contact the Flood Control Section at (702) 229-6541 to schedule a submittal appointment.

If items are not applicable for the subject site, provide N/A.

I. GENERAL REQUIREMENT		
Yes	No	
✓		A notarized letter from the adjacent property owner(s) allowing off-site grading. (A copy of the letter must be received prior to final acceptance of the drainage study.)
✓		Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.
✓		An electronic copy of the complete submittal is required to be submitted with one original hard copy of the study. Electronic documents should be on a universal computer-readable digital output device replicating your submittal. An Indexed Portable Document Format (PDF) or Print Ready CAD file formats with a minimum of 300dpi are the desired formats. If figures are in color, they must be scanned in color and saved as a separate file. <i>AM</i> by initial here, the engineer on record acknowledges that the electronic copy is an identical replicate of the original hard copy submitted to the City of Las Vegas.

II. GRADING PLAN INFORMATION		
Yes	No	
✓		(1) 24" X 36" copy of the Grading Plan, (including all Detail Sheets) sealed by the engineer.
✓		Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street. Note: Proposed top of curb elevations must be provided for both sides of roadways even if only half street construction is required.
✓		Label existing topography at a minimum 5 foot elevation interval including adjacent developments, finished floor elevations of existing buildings and top of existing curbs extending 100 feet around the perimeter of the site. (*Measured from the centerline of the adjacent roadway.)

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

II. GRADING PLAN INFORMATION		
Yes	No	
✓		Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains.
✓		All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
✓		Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.
✓		Back of lot elevations and lot drainage pattern for all lots including common lots.
✓		Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
✓		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
✓		This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
✓		Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
NA		Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
NA		Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
NA		The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
	X	Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
✓		Finished floor elevations for buildings adjacent to public drainage easements must be a minimum of 18 inches above the Q100 weir of submerged weir elevation, whichever is greater.

CITY OF LAS VEGAS MINIMUM DRAINAGE STUDY CRITERIA CHECKLIST

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
NA		Lots with "B and C Type Drainage" that drain from one lot to another through a drainage easement shall be required to install an underground nuisance drainage system or a 2-foot valley gutter. 16" x 24" minimum block wall openings are required for both options.
NA		Bubblers are required across 80 foot and greater ROW streets. When flows exceed 10 cfs, bubblers larger than 18 inches will be required up to a maximum of 36". Inlets must be sized to match the pipe size provided.

- Contact the Flood Control Section regarding the drainage study review fee. These fees are payable at the time of submittal.
- The Drainage Study must be conditionally approved prior to submitting improvement plans to the Civil and Planning Development of the Department of Building and Safety for review.

This document is intended as an **aid** in preparing Technical Drainage Studies for the City of Las Vegas. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all-inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use.

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL																	
DRAINAGE SUBMITTAL CHECKLIST																	
Project Name: 901 Trophy Hills	Map ID:																
Firm Name: McCay Engineering, LLC	Engineer: Jeremy S. McCay, P.E.																
Address: 11700 W. Charleston Blvd, Suite 170-298																	
City: Las Vegas	State: NV	Zip: 89135															
Phone Number: (702) 860-3897	Fax Number: NA																
Property Owner: The Trophy Hills Residence Trust																	
Address: 300 First Avenue, Suite 1																	
City: Needham	State: MA	Zip: 2494															
Reviewed by:	Date Received:	Date Accepted for Review:															
The following checklist is intended as a guide for the engineer preparing a Technical Drainage Study to submit to the local entity and Clark County Regional Flood Control District (if necessary). The listed items are the minimum information required prior to the entity performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (MANUAL). This document is intended as an aid in preparing Technical Drainage Studies. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use. If items are not applicable for the subject site, provide N/A. I. GENERAL REQUIREMENT <table style="width: 100%; border: none;"> <tr> <td style="width: 15%; text-align: center;">Yes</td> <td style="width: 15%; text-align: center;">No</td> <td></td> </tr> <tr> <td style="text-align: center;"><u> X </u></td> <td style="text-align: center;"><u> </u></td> <td>Design Manual Standard Form 1 with the engineer's seal and signature.</td> </tr> <tr> <td style="text-align: center;"><u> X </u></td> <td style="text-align: center;"><u> </u></td> <td>Design Manual Standard Form 4.</td> </tr> <tr> <td style="text-align: center;"><u> X </u></td> <td style="text-align: center;"><u> </u></td> <td>2 copies of the 24" x 36" Drainage Plan.</td> </tr> <tr> <td style="text-align: center;"><u> </u></td> <td style="text-align: center;"><u> NA </u></td> <td>A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.</td> </tr> </table>			Yes	No		<u> X </u>	<u> </u>	Design Manual Standard Form 1 with the engineer's seal and signature.	<u> X </u>	<u> </u>	Design Manual Standard Form 4 .	<u> X </u>	<u> </u>	2 copies of the 24" x 36" Drainage Plan.	<u> </u>	<u> NA </u>	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.
Yes	No																
<u> X </u>	<u> </u>	Design Manual Standard Form 1 with the engineer's seal and signature.															
<u> X </u>	<u> </u>	Design Manual Standard Form 4 .															
<u> X </u>	<u> </u>	2 copies of the 24" x 36" Drainage Plan.															
<u> </u>	<u> NA </u>	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.															
REFERENCE:		STANDARD FORM 2															

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS

Yes	No	
<u> X </u>	<u> </u>	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
<u> X </u>	<u> </u>	A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.
<u> N/A </u>	<u> </u>	Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
<u> N/A </u>	<u> </u>	On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs.
<u> X </u>	<u> </u>	Vicinity Map with local and major cross streets identified and a north arrow.

III. DRAINAGE PLAN

Yes	No	
<u> X </u>	<u> </u>	Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.
<u> X </u>	<u> </u>	Minimum scale: 1" = 60'.
<u> X </u>	<u> </u>	Project Name.
<u> X </u>	<u> </u>	Vicinity Map with local and major cross streets.
<u> X </u>	<u> </u>	Revision box.
<u> X </u>	<u> </u>	North arrow and bar scale
<u> X </u>	<u> </u>	Engineer's/consultant's address and phone number.
<u> X </u>	<u> </u>	Elevation datum and benchmark
<u> X </u>	<u> </u>	Legend for symbols and abbreviations.
<u> X </u>	<u> </u>	Cut/fill scarps, where applicable.
<u> X </u>	<u> </u>	Street names, grades, widths.
<u> X </u>	<u> </u>	Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
<u>X</u>	<u> </u>	Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where applicable.
<u>X</u>	<u> </u>	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
<u>N/A</u>	<u> </u>	Proposed typical street sections.
<u>X</u>	<u> </u>	Streets with off-set crowns.
<u>X</u>	<u> </u>	Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
<u>X</u>	<u> </u>	Property Lines.
<u>X</u>	<u> </u>	Right-of-way lines and widths, existing and proposed.
<u>X</u>	<u> </u>	Existing improvements and their elevations.
<u>N/A</u>	<u> </u>	Delineation of proposed onsite drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
<u>N/A</u>	<u> </u>	Concentration points and drainage flow direction with Q100 and V100 and D100 in streets.
<u>X</u>	<u> </u>	Cumulative flows, velocity , and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
<u>X</u>	<u> </u>	Location and cross-section of street capacity calculations
<u>N/A</u>	<u> </u>	Cross-sectional detail for channels, including cutoff wall locations.
<u>X</u>	<u> </u>	Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations
<u>X</u>	<u> </u>	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
<u>N/A</u>	<u> </u>	Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.
<u>X</u>	<u> </u>	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
<u>X</u>	<u> </u>	Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood walls with 8-inch concrete masonry unit.
<u>X</u>	<u> </u>	Building and/or lot numbers.
<u>N/A</u>	<u> </u>	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
<u>X</u>	<u> </u>	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.
<u>X</u>	<u> </u>	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE.
<u>X</u>	<u> </u>	Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from the Q_{100} flows.
<u>X</u>	<u> </u>	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.

IV. HYDROLOGIC ANALYSIS

Yes	No	
<u>N/A</u>	<u> </u>	Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
<u>N/A</u>	<u> </u>	Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
<u>N/A</u>	<u> </u>	Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
<u>N/A</u>	<u> </u>	Use of correct precipitation values in and around the McCarran Airport rainfall area.
<u>N/A</u>	<u> </u>	A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
<u>N/A</u>	<u> </u>	A summary table of stormwater flows showing basin area, Q_{10} and Q_{100} for both individual basins and combined basin flows, where applicable.
<u>X</u>	<u> </u>	Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
<u>X</u>	<u> </u>	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners in accordance with current Nevada Drainage Law.

REFERENCE:

STANDARD FORM 2

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
<u>N/A</u>	<u> </u>	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
<u>X</u>	<u> </u>	Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. Provide "d x v" products for the Q_{100} and Q_{10} flows representing the worst case for interior and all perimeter streets. $Q_{100} \text{ d x v} \leq 8$. $Q_{10} \text{ d x v} \leq 6$ and 12 foot dry lane for rights-of-way ≥ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
<u>X</u>	<u> </u>	A summary table of interior and exterior street capacity calculations showing the street name, Q_0 flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
<u>N/A</u>	<u> </u>	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
<u>N/A</u>	<u> </u>	Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, superelevation and tee intersection losses. where appropriate
<u>X</u>	<u> </u>	Provide necessary freeboard requirements to set the finished floor elevations of all proposed buildings, 2 x depth of flow or depth of flow plus 18 inches of freeboard, whichever is less. The minimum requirement is 6 inches above adjacent upstream top of curb. Buildings adjacent to drainage easements must always be provided with 18 inches of freeboard above the Q_{100} weir height or flow depth, which ever is greater.
<u>N/A</u>	<u> </u>	A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. • Field survey data. • Input and output information. • Plotted cross-sections based on survey with proper encroachments. • A map showing the location of the cross-sections. • Analysis of both sub and super-critical flow segments. • A summary table and a discussion of the results in the text of the report.
<u>X</u>	<u> </u>	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
<u>X</u>	<u> </u>	Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation.
<u>X</u>	<u> </u>	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.

REFERENCE:

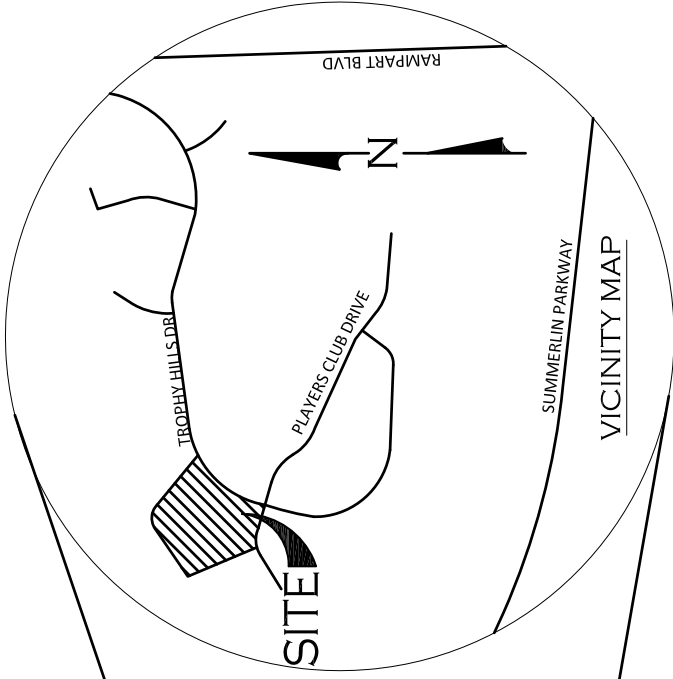
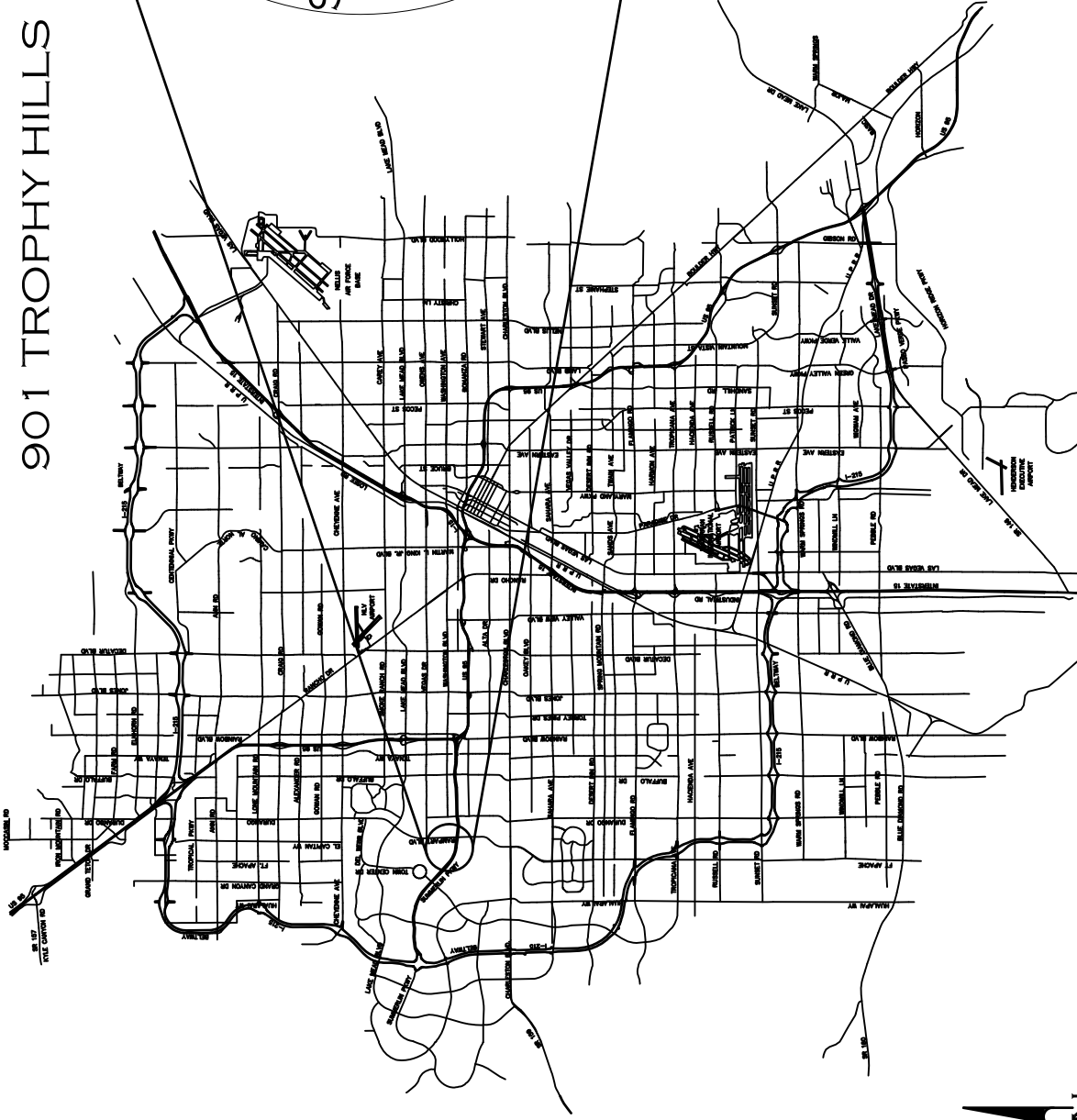
STANDARD FORM 2



**McCay
ENGINEERING**

APPENDIX

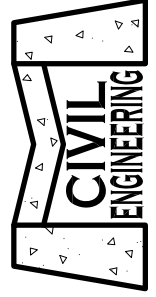
901 TROPHY HILLS



VICINITY MAP
SCALE: 1" = 1 MILE

FIGURE 1

VICINITY MAP



MCCAY ENGINEERING

11700 W. Charleston Blvd.
Suite #170-298
Las Vegas, Nevada 89135
p 702-860-3897 f 702-363-2887

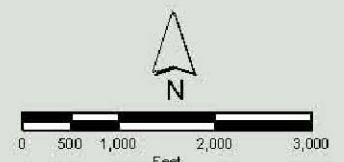
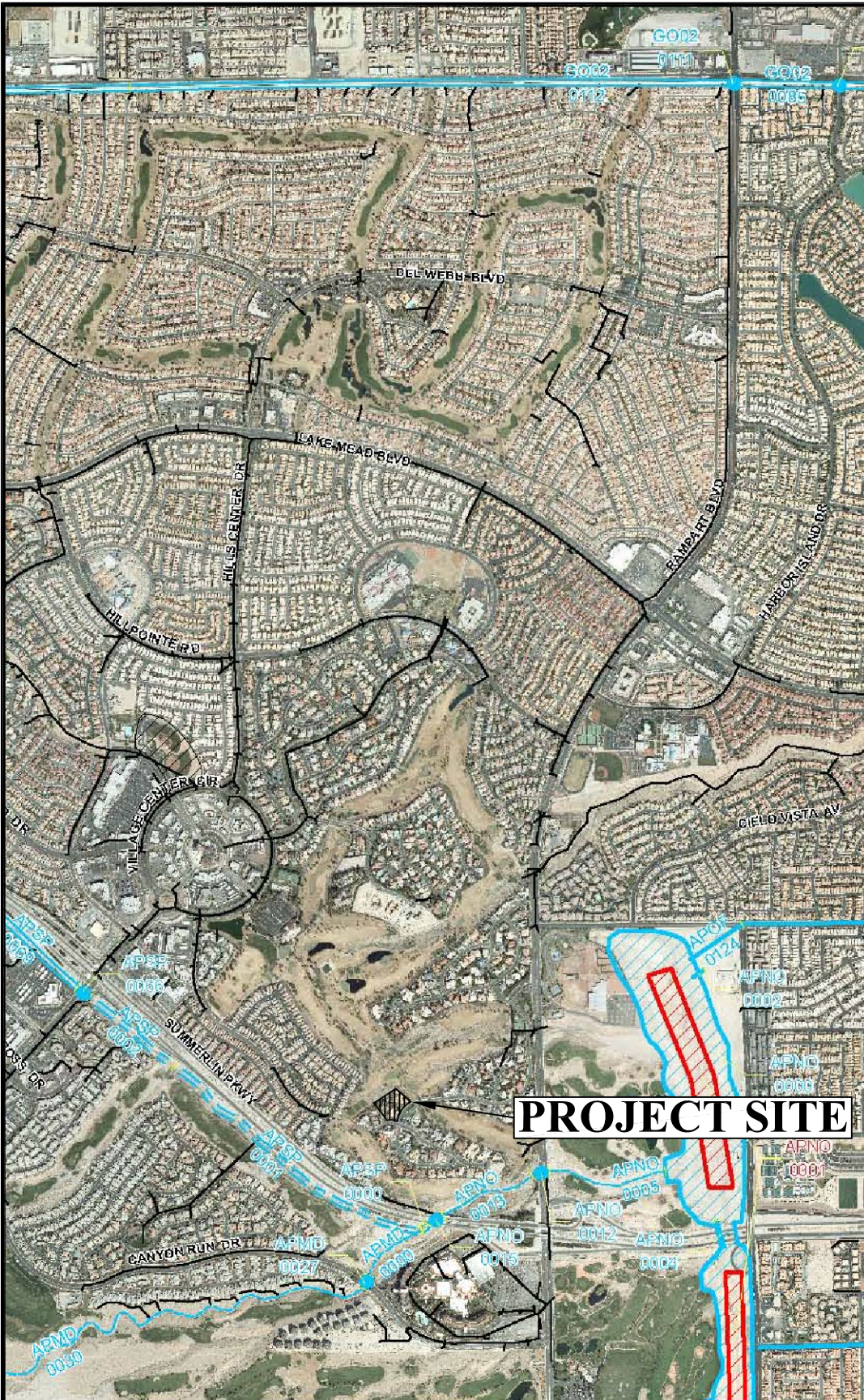
JOB NUMBER: 12019
DRAWN BY: JSM

DATED: 9/6/2012

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE
FIGURE F-25
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
 - Existing Facilities
 - Category A Proposed Facilities
 - Category B Proposed Facilities
 - Local Existing Facilities
 - Local Proposed Facilities
 - Detention Basin
 - Culvert or Bridge Crossing
 - Stormdrain
 - Lined Channel
 - Unlined Channel
 - Levee/Dike
 - Natural Wash/Floodway
 - ID-Mile Separator
- Remove & Replace/Parallel Facilities**
- | Category A | Category B |
|------------|------------|
| Channel | Channel |
| Stormdrain | Stormdrain |
| Crossing | Crossing |



Refer to Figure G-2 for Aerial Source(s)



PBSI

FIGURE 2

FLOOD CONTROL FACILITIES

JOB NUMBER: 11004
DRAWN BY: JSM
DATED: 4/10/12



McCAY ENGINEERING

11700 W. Charleston Blvd.
Suite #170-298
Las Vegas, Nevada 89135
p 702-860-3897

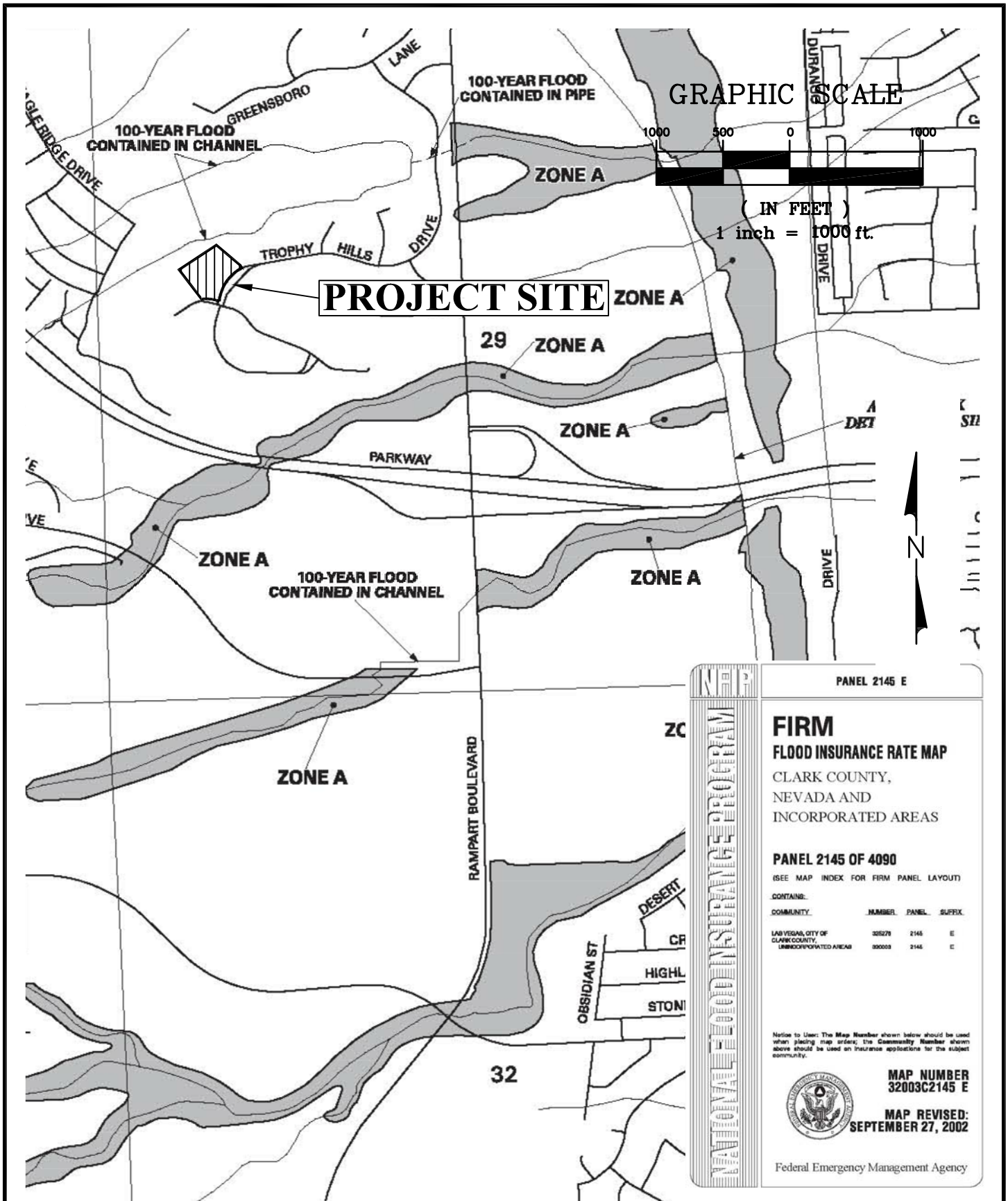


FIGURE 3
FEMA MAP



McCay Engineering

11700 W. Charleston Blvd.
Suite #170-298
Las Vegas, Nevada 89135
p 702-860-3897

JOB NUMBER: 12019

DRAWN BY: JSM

DATED: 9/6/2012

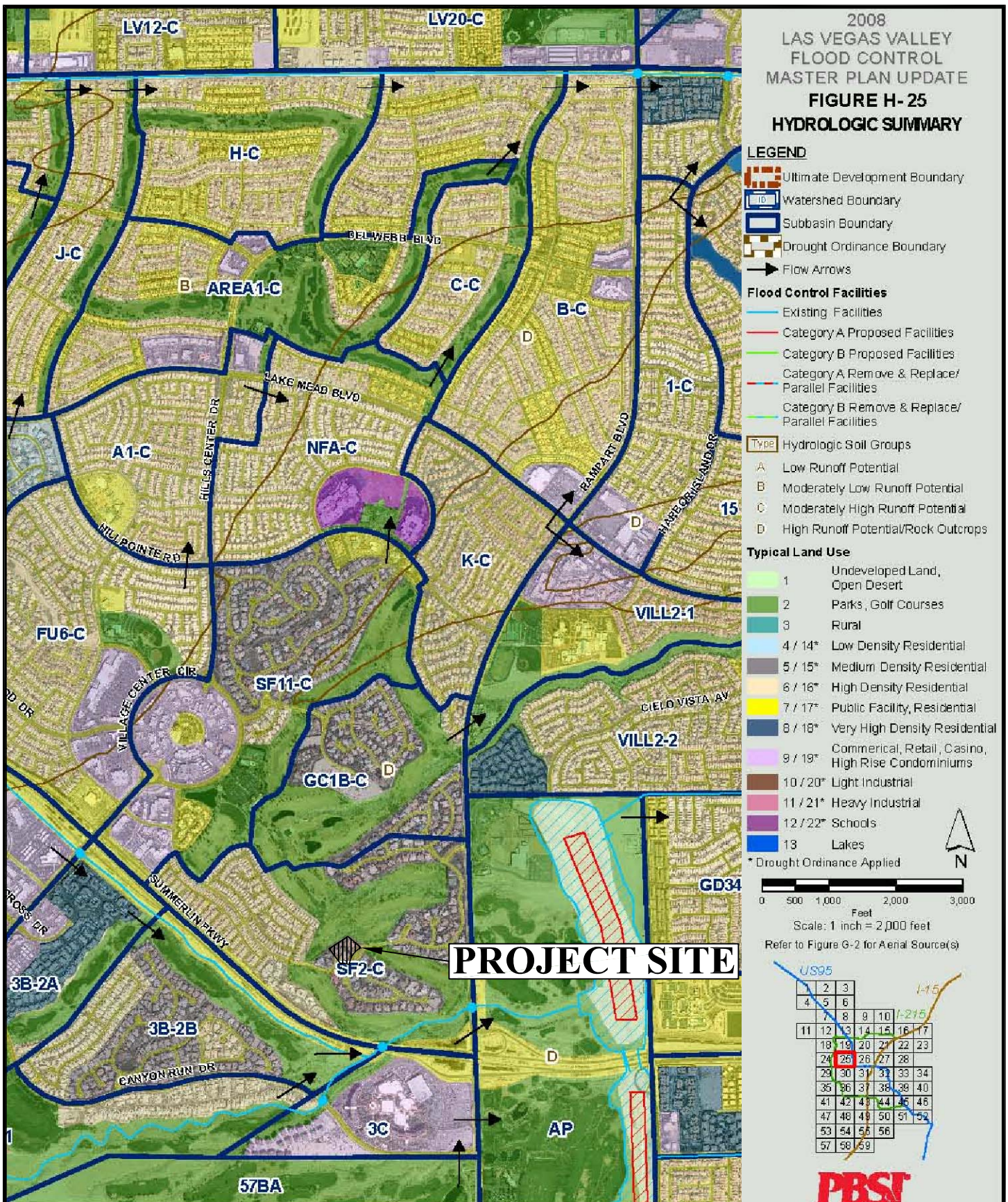


FIGURE 4
SOILS MAP



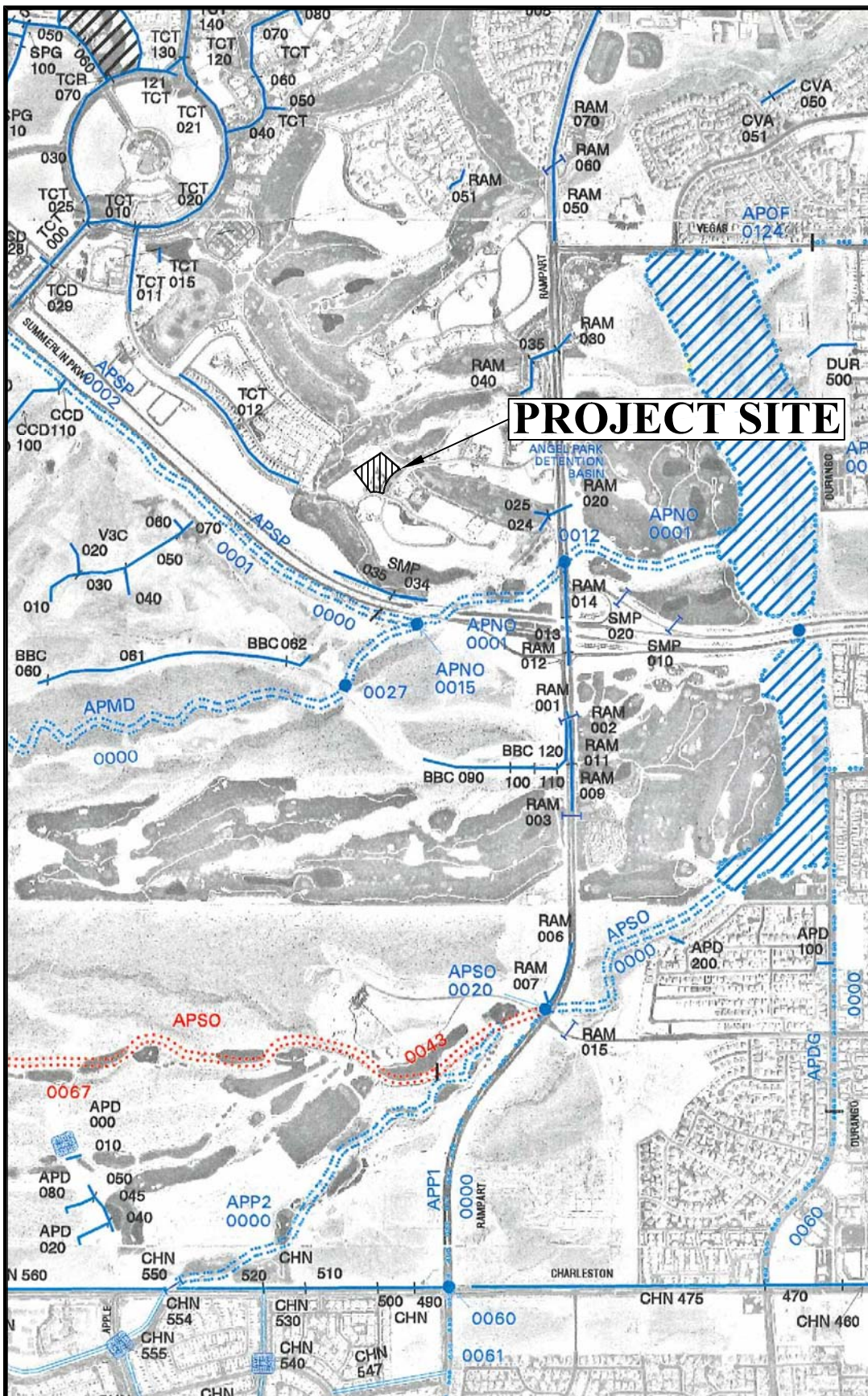
McCay Engineering

11700 W. Charleston Blvd.
Suite #170-298
Las Vegas, Nevada 89135
p 702-860-3897

JOB NUMBER: 12019

DRAWN BY: JSM

DATED: 9/6/2012



City of Las Vegas

CITY - WIDE HYDROLOGY ANALYSIS

LEGEND

- EXISTING REGIONAL DETENTION BASINS
- PROPOSED REGIONAL DETENTION BASINS
- EXISTING LOCAL DETENTION BASINS
- EXISTING REGIONAL BRIDGES
- PROPOSED REGIONAL BRIDGES
- EXISTING LOCAL BRIDGES
- EXISTING REGIONAL CULVERT
- PROPOSED REGIONAL CULVERT
- EXISTING LOCAL CULVERT
- EXISTING REGIONAL PIPELINE
- PROPOSED REGIONAL PIPELINE
- EXISTING LOCAL PIPELINE
- EXISTING REGIONAL CHANNEL
- PROPOSED REGIONAL CHANNEL
- EXISTING LOCAL CHANNEL
- EXISTING REGIONAL DIKE/LEVEE
- PROPOSED REGIONAL DIKE/LEVEE
- EXISTING LOCAL DIKE/LEVEE
- EXISTING STORM WATER PUMPING STATION
- PROPOSED BELTWAY ALIGNMENT

FIGURE F-12

1	2			
3	4			
5	6			
7	8	9	10	
11	12	13	14	15
16	17	18	19	

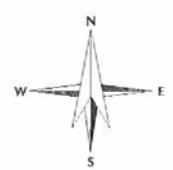


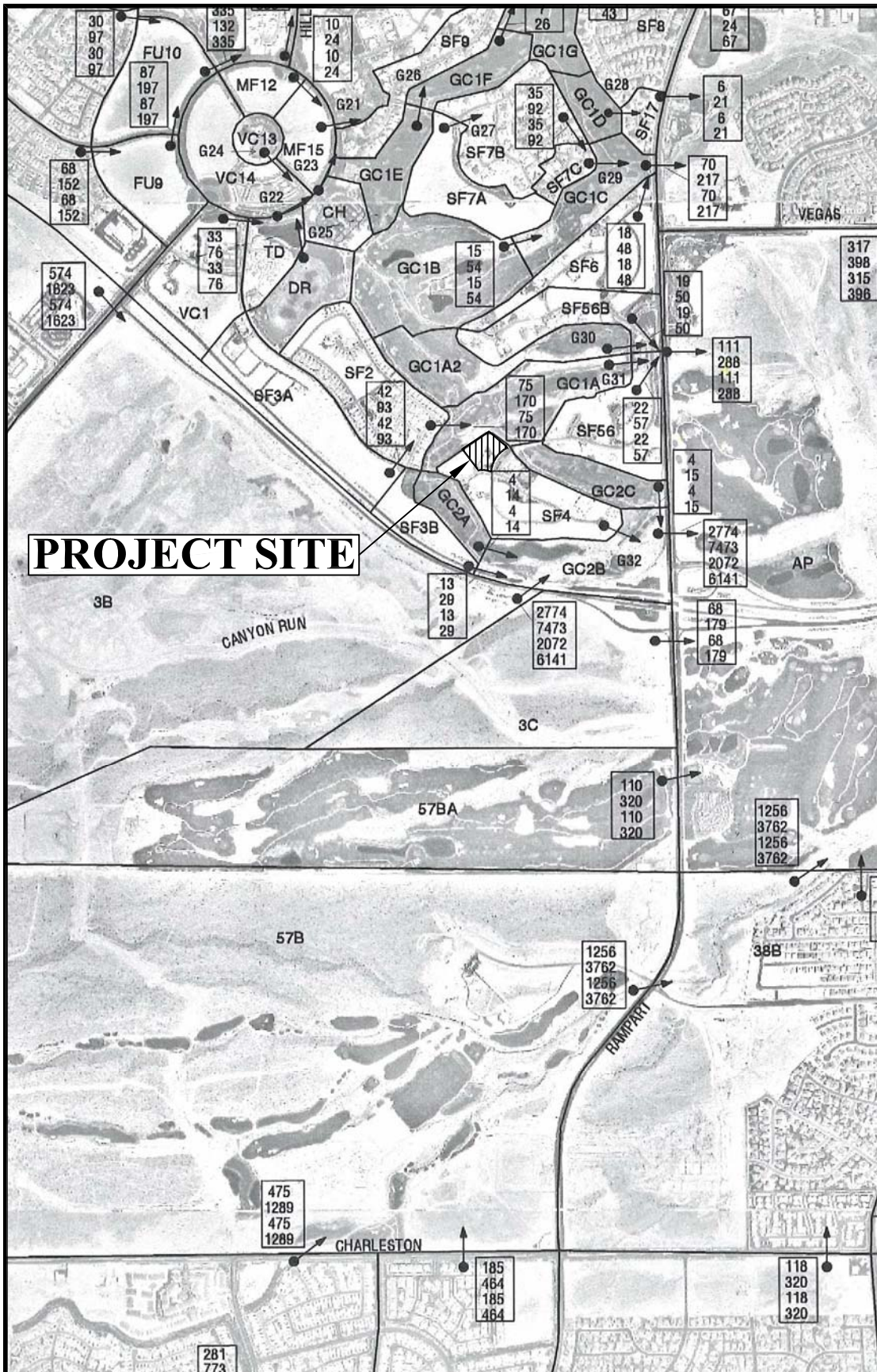
FIGURE 5

1997 CITY-WIDE HYDROLOGY ANALYSIS
FIGURE F-12



McCay Engineering

11700 W. Charleston Blvd.
Suite #170-298
Las Vegas, Nevada 89135
p 702-860-3897



CITY WIDE HYDROLOGY STUDY UPDATE - 1997

LEGEND

— SUB-BASIN BOUNDARY

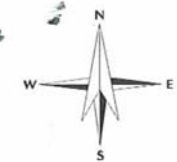
→ FLOW ARROW

250 10-YEAR EXISTING FLOW
500 100-YEAR EXISTING FLOW
300 10-YEAR ULTIMATE FLOW
800 100-YEAR ULTIMATE FLOW

(FLOWS IN CFS)

NOTE:

Facility flows must be subtracted from flows shown to determine surface flows. (See "F" sheets for facility flows)



1 INCH = 1600 FEET

FIGURE H-12

1	2		
3	4		
5	6		
7	8	9	10
11	12	13	14
15	16	17	18



POST,
BUCKLEY,
SCHUH &
JERNIGAN, INC.

FIGURE 6

1997 CITY-WIDE HYDROLOGY ANALYSIS
FIGURE H-12



MCCAY ENGINEERING

11700 W. Charleston Blvd.
Suite #170-298
Las Vegas, Nevada 89135
p 702-860-3897

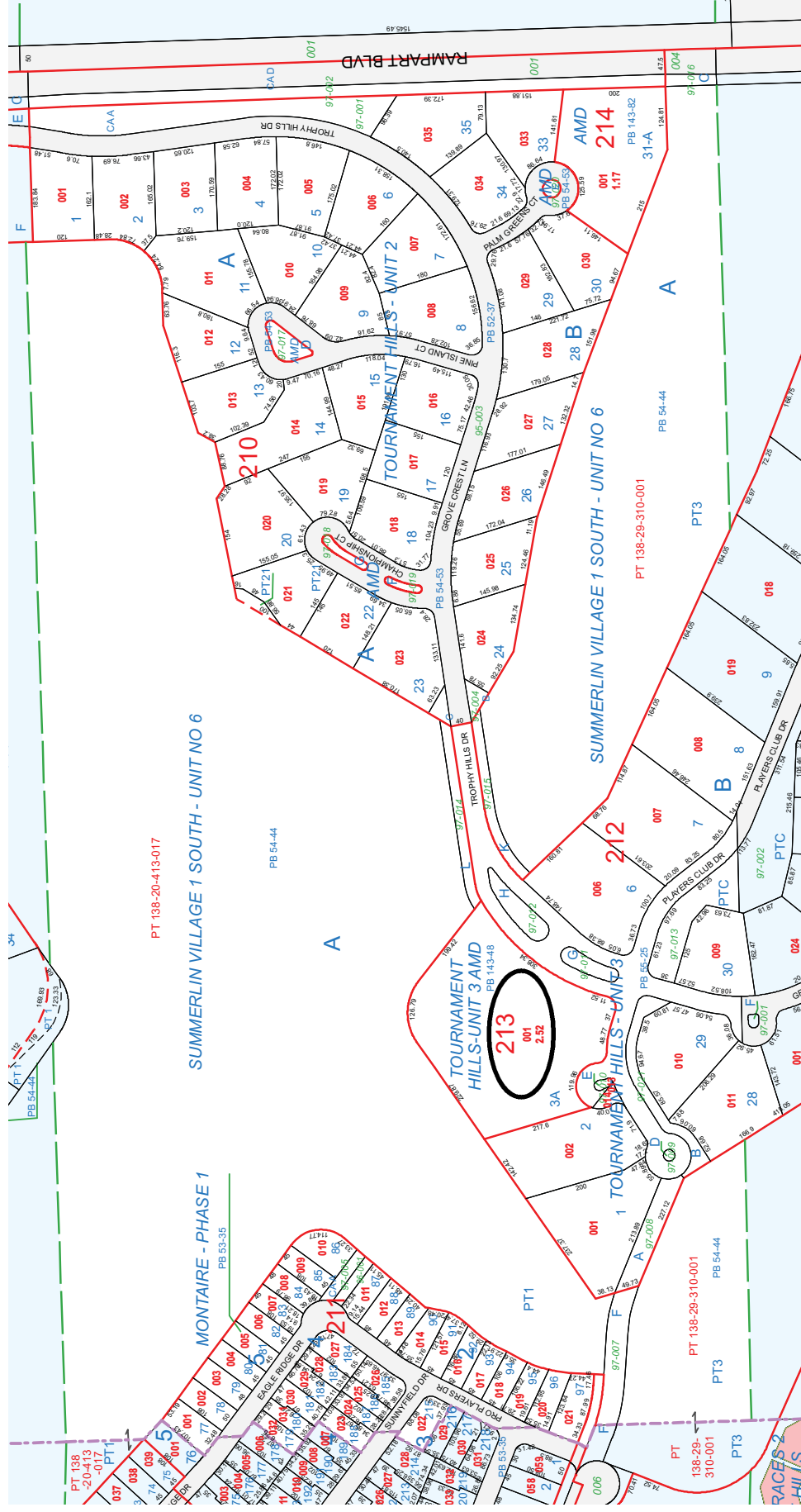
JOB NUMBER: 12019

DRAWN BY: JSM

DATED: 9/6/2012

This map is for assessment use only and does NOT represent a survey. No liability is assumed for the accuracy of the data delineated herein. Information on roads and other non-assessed parcels may be obtained from the Road Document Listing in the Assessor's Office. This map is compiled from official records, including surveys and deeds, but only contains the information required for assessment. See the recorded documents for more detailed legal information.		MAP LEGEND	
		 USE THIS SCALE(FEET) WHEN MAP REDUCED FROM 1:1X17 ORIGINAL	
NOTES			

ASSESSOR'S PARCELS - CLARK CO., NV.		T20S R60E		29		S 2 NW 4		138-29-2																																																																																
Michele W. Shafe - Assessor																																																																																								
PARCEL BOUNDARY CONDOMINIUM UNIT SUB BOUNDARY AIR SPACE PCL PMLD BOUNDARY RIGHT OF WAY PCL ROAD EASEMENT SUB-SURFACE PCL MATCH / LEADER LINE HISTORIC LOT LINE HISTORIC SUB BOUNDARY HISTORIC PMLD BOUNDARY SECTION LINE 		007 ROAD PARCEL NUMBER 001 PARCEL NUMBER 1.00 ACRES 202 PARCEL SUBSECO NUMBER PB 24-45 PLAT RECORDING NUMBER 5 BLOCK NUMBER 5 LOT NUMBER GL5 GOV LOT NUMBER		<table border="1" style="width: 100%; text-align: center;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td></tr> <tr><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td></tr> </table>		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	<table border="1" style="width: 100%; text-align: center;"> <tr><td>8</td><td>4</td><td>8</td><td>4</td></tr> <tr><td>5</td><td>1</td><td>5</td><td>1</td></tr> <tr><td>6</td><td>2</td><td>6</td><td>2</td></tr> <tr><td>7</td><td>3</td><td>7</td><td>3</td></tr> <tr><td>8</td><td>4</td><td>8</td><td>4</td></tr> <tr><td>5</td><td>1</td><td>5</td><td>1</td></tr> </table>		8	4	8	4	5	1	5	1	6	2	6	2	7	3	7	3	8	4	8	4	5	1	5	1	<table border="1" style="width: 100%; text-align: center;"> <tr><td>127</td><td>126</td><td>125</td><td>124</td></tr> <tr><td>136</td><td>137</td><td>138</td><td>139</td></tr> <tr><td>165</td><td>164</td><td>163</td><td>162</td></tr> <tr><td>174</td><td>175</td><td>176</td><td>177</td></tr> </table>		127	126	125	124	136	137	138	139	165	164	163	162	174	175	176	177	BOOK MAP		REV: SCALE:	
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174	175	176	177																																																																																					
				Rev: 05/21/2012				Scale: 1" = 200'																																																																																





Memorandum

Department of Public Works
City Engineer Division
Survey Section

Phone (702) 229-6217
Fax (702) 804-8582
www.lasvegasnevada.gov

From: ALAN R RIEKKI, PLS - CITY SURVEYOR

To: STEVE GEBEKE - DEPARTMENT OF PLANNING
STEVE SWANTON - DEPARTMENT OF PLANNING
TRENT KEENAN, PLS
TROPHY HILLS RESIDENCE TRUST
PLAYERS CLUB REALTY TRUST
WRIGHT ENGINEERS
BAYIT 3 REALTY TRUST

Date: March 03, 2011

RE: **FINAL MAP 40979 - TOURNAMENT HILLS - UNIT 3 AMENDED**

Attached is a redlined drawing delineating comments for the above map. **THE REDLINED PRINT MUST BE RETURNED TO SURVEY ALONG WITH A CORRECTED DRAWING FOR APPROVAL.**

431494 CURRENT PL Status: Conditional Approval February 28, 2011

If you have any questions regarding the following Planning comments please call 229-6301

1. The Amended Final Map Mylar shall be in conformance with all applicable Conditions of Approval for the original Final Map of Tournament Hills - Unit 3 (FM-0073-92).
2. The Final Map shall be revised as required by the Department of Planning prior to the submittal of the original Mylar for signature by the City. These revisions include the following:
 - a. The file number "FMP-40979" shall be placed above the box at the lower right hand corner of the cover sheet.
 - b. The CERTIFICATE OF DIRECTOR OF PLANNING AND DEVELOPMENT shall be revised to read, "CERTIFICATE OF DIRECTOR OF PLANNING APPROVAL."
 - c. Within the Certificate of Director of Planning Approval, text shall be revised to replace "the Director of Planning and Development" with "the Director of Planning."
 - d. The signature block for the Director of Planning shall read as follows:

Flinn Fagg, AICP
Acting Director of Planning
City of Las Vegas, Nevada

Date

3. Provide an approval letter to the Department of Planning from the Master Developer (Summerlin) consenting to the amended map.

431495 DEVCO Status: Conditional Approval March 01, 2011

If you have any questions regarding the following Development Coordination comments please call 229-6578

COMMENTS:

We have no objection to this Amended Final Map request to Amend Residential Lots 3, 4, and 5 of

Block "A" as long as all previous conditions of approval for the Tournament Hills Unit 3 subdivision and all subsequent site-related actions are ultimately complied with.
CONDITIONS OF APPROVAL:

1. On the cover sheet, the signature block for the City Engineer should be "Acting City Engineer: David Bowers, P. E. #16736".
 2. All three parcels shall have the same ownership designation and there shall be one Owner's Certificate prior to recordation of this Final Map. The last paragraph of the new Owner's Certificate shall not have a reference to public streets and should be replaced with the Owner's Certificate found on the original Final Map, Book 55, Page 26.
 3. Site development to comply with all previous conditions of approval for the Tournament Hills Unit 3 Final Map and all other site related actions.
 4. Prior to recordation, this Final Map must show all required easements and right-of-way dedications, must coincide with the approved drainage plan/study and construction plans, and the Owner's Certificate must make specific reference to all easements and rights-of-way noted/offered for public use as required by the Department of Public Works. Appropriate bonds must be in place, including bonding for survey monument placement and/or removal.
-

431496 SURVEY Status: Conditional Approval March 02, 2011

If you have any questions regarding the following Survey comments please call 229-6217

In addition to the above comments.

Minor typo in the Surveyors Certificate.

Please correct the City Surveyors license number to 12469.

Please check and revise the adjoiner information as shown on Sheet 3.

Please correct miscellaneous errors, typos, or omissions as shown on the redlines.

End of Comments.



Hydraulic Analysis Report

Project Data

Project Title: 901 TROPHY HILLS DRIVE

Designer:

Project Date: Tuesday, September 04, 2012

Project Units: U.S. Customary Units

Notes:

Channel Analysis: PLAYERS CLUB DR - 37'ROW - 11 CFS

Notes:

Input Parameters

Channel Type: Custom Cross Section

Cross Section Data

Station (ft)	Elevation (ft)	Manning's n
0.00	0.50	0.0130
0.50	0.50	0.0130
0.50	0.00	0.0130
2.00	0.17	0.0130
18.50	0.50	0.0160
35.00	0.17	0.0160
36.50	0.00	0.0130
36.50	0.50	0.0130
37.00	0.50	-----

Longitudinal Slope: 0.0265 (ft/ft)

Flow: 11.0000 (cfs)

Result Parameters

Depth: 0.3632 (ft)

Area of Flow: 2.6999 (ft²)

Wetted Perimeter: 23.0646 (ft)

Hydraulic Radius: 0.1171 (ft)

Average Velocity: 4.0743 (ft/s)

Top Width: 22.3153 (ft)

Froude Number: 2.0642

Critical Depth: 0.4448 (ft)

Critical Velocity: 2.2649 (ft/s)

Critical Slope: 0.0057 (ft/ft)

Critical Top Width: 30.4849 (ft)

Calculated Max Shear Stress: 0.6005 (lb/ft²)

Calculated Avg Shear Stress: 0.1936 (lb/ft²)

Composite Manning's n Equation: Lotter method

Manning's n: 0.0142

**DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 1 SOUTH
PARCEL 4
TOURNAMENT HILLS - UNIT III**

JUNE 1992

620.702ED

Prepared for:

**Howard Hughes Properties
3800 Howard Hughes Parkway
Las Vegas, Nevada 89109**

Prepared by:

**G. C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, Nevada 89102**

CITY OF LAS VEGAS

DATE:

INTER-OFFICE MEMORANDUM

September 11, 1992

TO:

Kent Nash
Land Development Services
Department of Public Works

FROM:

MAS for
Tom Chiatovich, PE
Chief, Flood Control
Dept. of Public Works

SUBJECT:

Summerlin Village 1 South - Parcel 4, AKA
Tournament Hills - Unit III
File No. DS901C
Date of Engineer's Stamp: 08/26/92
Date Received by City: 08/27/92

COPIES TO:

G. C. Wallace, Inc.
CCRCD
John McNellis, PE
Charles Kajkowski, PE

HISTORY:

1st Submittal
2nd Submittal
3rd Submittal

07/24/92 - Not Acceptable
08/21/92 - Not Acceptable
(See below comments)

REMARKS:

3rd Submittal (Addendum 2)

The drainage study for the subject project has been reviewed and

 X is acceptable in concept subject to conformance to all
City standards and the following conditions:

 must be resubmitted or supplemented.

1. Section A showing the grass lined overflow section on sheet G-3 (3 of 8) does not correspond with the plan view shown on the same sheet. This section must be revised to show the 15-foot sideyard setback in Lot 13 as the same line as the 20-foot private drainage easement line to reflect the plan view (or revise the plan to reflect the section).

END OF REMARKS
ssn

T/R/S: 20/60/29
L-29

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Tournament Hills-Unit 3 Date: June 16, 1992

Location of Development: a) Descriptive Summerlin Expressway/Rampart
b) Sect. 29 Twn. 20S Rng. 60E

Name of Owner: Howard Hughes Properties Assessors Parcel No: _____

Contact Person-Name: Randall K. Gremlich Telephone No: 363-1200

Firm: G. C. Wallace, Inc.

Address: 1555 S. Rainbow Blvd.

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 29 Acres Being Developed/Disturbed: 29 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? 0.2 Acres
6. Has the site drainage been evaluated in the past? YES NO. If yes, please identify documentation: G. C. Wallace, Village 1 South, 1991
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:
RPT1 - Culverts under Rampart
8. Briefly describe your proposed schedule for the subject project: Winter 1991



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.

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

Local Entity File No. _____

Revision	Date

REFERENCE:

STANDARD FORM 1

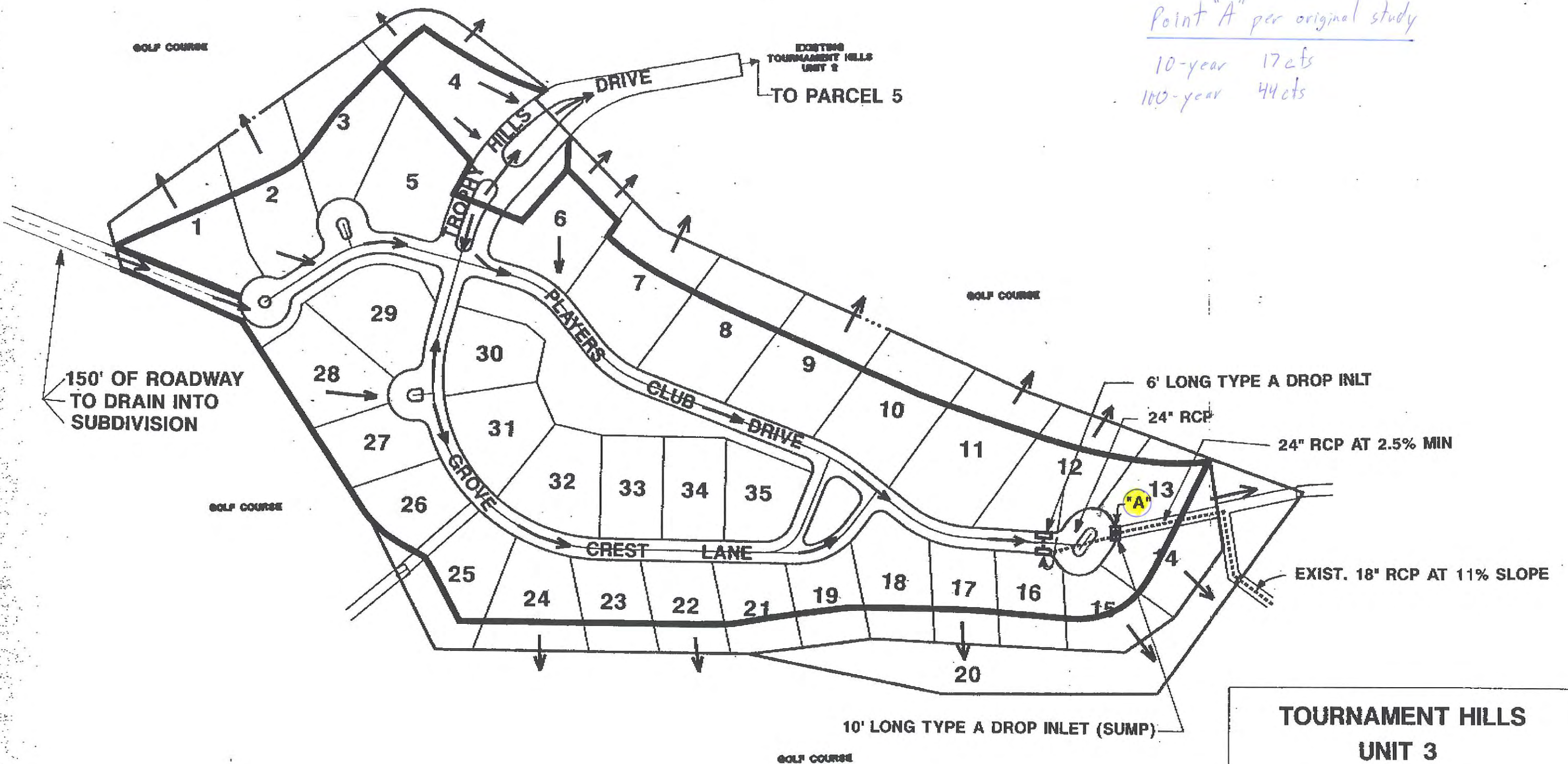
TABLE 2

Estimated Peak Runoff (cfs)

<u>Frequency</u>	<u>Point "A"</u>
10-year	17
100-year	44

These runoff values assume that not all the runoff from the parcel will be collected in the streets and then routed to Point "A". Due to topographic restraints most back lots will drain directly to the surrounding golf course. Since the fence will be wrought iron the flow of runoff away from the houses will not be impeded. The grading plan shows the area that will drain directly to the golf course. The total acreage of Parcel 4 is 29.14 acres with 6.25 acres draining directly to the golf course, 0.89 acres draining to Parcel 5, and 0.14 acres draining onto this site from the roadway to the future Parcel 2 and 3. The total area contributing to Point "A" is 22.14 acres.

Most of the 100-year runoff draining to point "A" is proposed to be picked up in drop inlets at the low point of the cul-de-sac and then carried to the adjacent golf course in a pipe. It is proposed to pick up 30 cfs in three drop inlets. A 10-foot wide easement is required along the lot line between lot 13 and 14 to allow for the flow in excess of this 30 cfs flow at this point. This easement would also need to carry this 100-year flow (44 cfs) in case the drop inlet is clogged. The drop inlets are sized to carry 50 percent more than the 30 cfs flow, and are therefore sized to pick up 45 cfs. A 10-foot long type "A" drop inlet (sump condition) plus two 6-foot long drop inlets are recommended. Whatever runoff which does not enter the drop inlet should surface flow through the 10-foot wide easement to the golf course area east of the subdivision. Lining is required for this 10-foot easement. Erosion protection is required where the easement meets the golf course area.



TOURNAMENT HILLS UNIT 3

FIGURE 6
DRAINAGE PATTERNS

G.C. WALLACE, INC.
Engineering/Architecture
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89102



April 14, 2011

CIVIL

STRUCTURAL

MECHANICAL

ELECTRICAL

PLUMBING

SURVEYING

PLANNING

LEED

Albert Sung, P.E.
Flood Control
City of Las Vegas Public Works
731 S. Fourth Street
Las Vegas, Nevada 89101

**RE: UPDATE TO THE TECHNICAL DRAINAGE STUDY FOR TOURNAMENT HILLS –
UNIT 3 – LOTS 3, 4, AND 5 A.K.A. 901 TROPHY HILLS**
Job No. CN111029
DS4521

Dear Mr. Sung:

We have received the comment letter for the Technical Drainage Study for 901 Trophy Hills, dated March 2, 2011. The format for each response is as follows: the numbered comment from the City of Las Vegas is presented first in bold followed by Wright Engineers' response. A copy of the review comments is attached. Any required supporting calculations for each response are included in the *Appendix*.

- 1. Provide a copy of the zoning/planning conditions associated with this site (FMP-40979) with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.**

RESPONSE: A copy of the FMP-40979 conditions of approval is provided in the *Appendix*.

- 2. The project proposes to discharge concentrated flows through storm drain pipes at two distinct locations at the northwest property line to the adjacent golf course. Since this is concentrated flow which differs from the original sheet flow design. This may cause erosion and maintenance problem for the golf course owner/management. A notarized letter of acknowledgment or acceptance of the proposed design must be obtained from the adjacent golf course prior to the final approval of the drainage study. Also clarify whose responsibility is it for the maintenance of the storm drain pipes within the golf course.**

RESPONSE: Unfortunately, the request for permission to discharge concentrated flow was denied by the golf course. The storm drain system has been revised to outlet to Trophy Hills Drive via a concrete flume with sidewalk underdrains. In the existing condition lot 4 drains to Trophy Hills Drive, while lots 3 and 5 drain to Players Club Drive. Due to the revision in the storm drain system a majority of the storm water from lots 3 and 5 will now drain to Trophy Hills Drive.

7425 Peak Drive
Las Vegas, NV 89128
(p) 702.933.7000
(f) 702.933.7001
800.933.7611
wrightengineers.com

Hydrologic calculations have been completed for the project site and demonstrate that the 100-year peak flow increase to Trophy Hills Drive is approximately 4cfs. This minor diversion of flow will not negatively impact the downstream properties. The total site, a combination of lots 3, 4 and 5, produces 7cfs in the 100-year storm. A hydraulic cross section of Trophy Hills Drive has been provided. This section demonstrates that Trophy Hills Drive can adequately convey the additional flow at a flow depth of 0.31-feet. All necessary calculations and figures have been provided in the Appendix.

The revised storm drain system has been adequately sized to handle the 100-year storm flow. Emergency overflow paths have also been provided while still protecting the finished floor.

3. **At the northeast corner of the property, there appears to be a storm drain line running from the northwest corner of the building and ends at the north property wall, but without any note for discharging. Please address in the next submittal.**

RESPONSE: The storm drain system has been revised and the storm drain line in question now discharges to Trophy Hills Drive. Please see response to comment number 2 for additional information.

4. **Construction Note #12 calls for the installation of wall opening(s) but to nowhere be found on the grading plan. Clarify in the next submittal.**

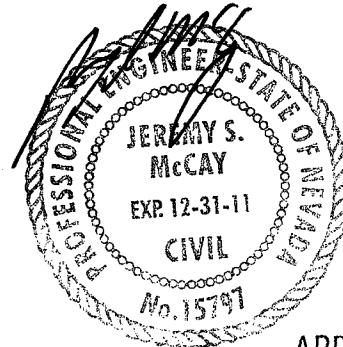
RESPONSE: Construction Note #12 was provided in error. There are no wall openings proposed with this project.

If you have any further questions or comments regarding this study, please do not hesitate to contact this office at (702) 933-7000.

Sincerely,
Wright Engineers,

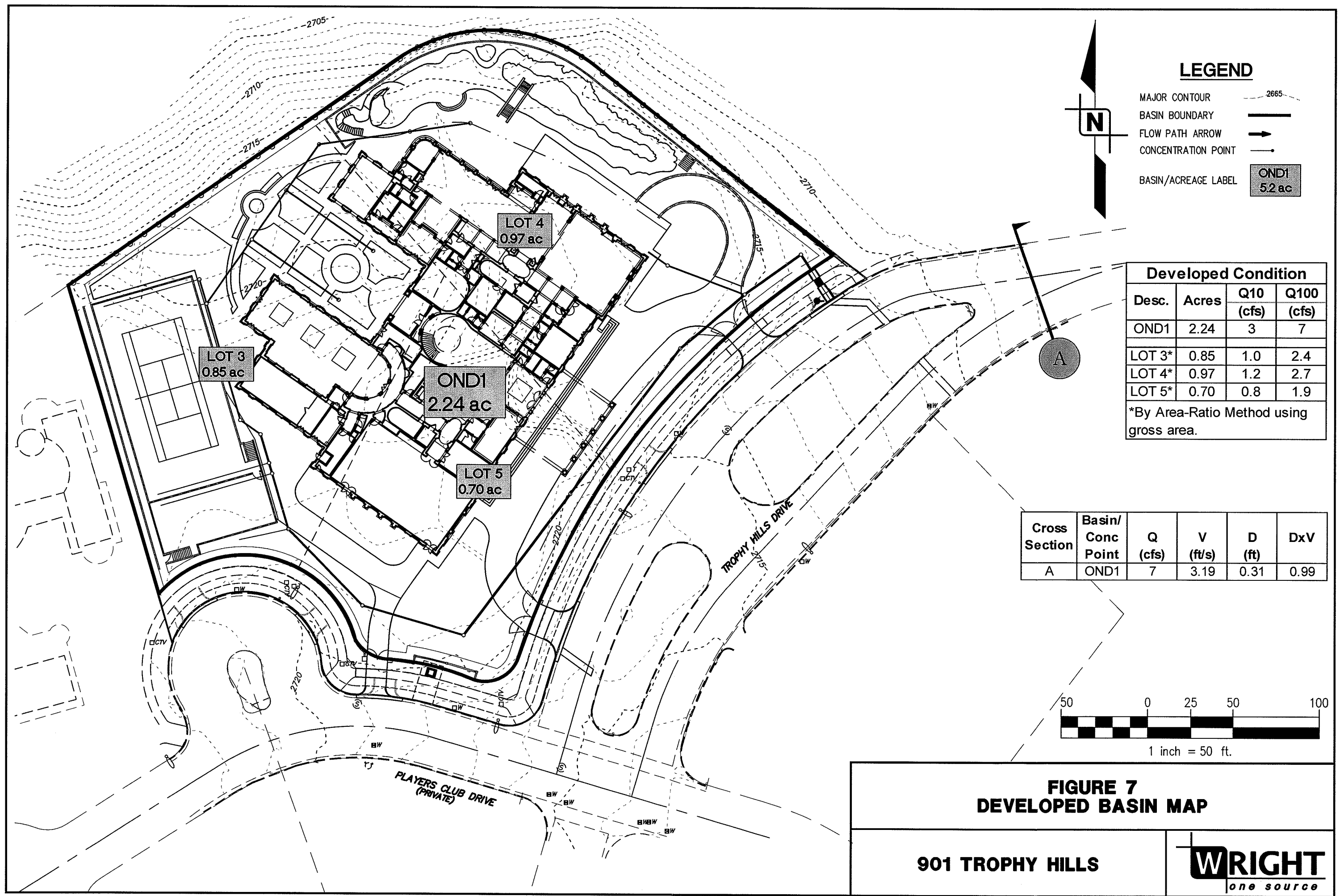


Robert D. Hansen, E.I.
Hydrologic/Hydraulic Services



APR 13 2011

Jeremy S. McCay, P.E.
Principal



C:\jeremy\work\projects\2019\981\Trophy Hills\Drawings\1801981.dwg REV:06/09/2019 2:12:32PM JEREMY



CONSTRUCTION NOTES

1. CONSTRUCT ONSITE CONCRETE DRIVEWAY PER ARCH PLANS
2. CONSTRUCT TENNIS COURT PER ARCH PLANS
3. SEE PLUMBING PLANS FOR CONTINUATION
4. POOL & SPA PER ARCH PLANS
5. LANDSCAPED AREA PER LANDSCAPE ARCH PLANS
6. CONSTRUCT WATER FEATURE PER LANDSCAPE ARCH PLANS
7. CONSTRUCT HARDSCAPE PER LANDSCAPE ARCH PLANS
8. CONSTRUCT DECORATIVE WALL PER ARCH PLANS
9. EX. RETAINING WALL & WROUGHT IRON VIEW FENCE TO BE REMOVED
10. EX. SITE WALL TO REMAIN
11. CONSTRUCT RETAINING WALL PER STRUCTURAL PLANS
12. MECHANICAL YARD - SEE ARCH. PLANS
13. CONSTRUCT 5' CONCRETE FLUME PER DETAIL ON SHEET DT1
14. INSTALL (2) 2" WIDE SIDEWALK UNDERDRAIN PER CCAUSD #236
15. INSTALL 6" RISER AND GRATE
16. INSTALL 2" AC PAVING OVER 4" TYPE II BASE OVER 6" TYPE I BASE
17. SEE ARCH AND STRUCTURAL PLANS FOR CONTINUATION OF DRIVEWAY

NOTE: ALL ON-SITE STORM DRAINS ARE PRIVATELY OWNED AND PRIVATELY MAINTAINED

SETBACKS:

SINGLE FAMILY DETACHED (SF1) DISTRICT
FRONT: 25'
SIDE: 10'
CORNER: 15'
REAR: 20'

FLOOD ZONE NOTE

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NUMBER 32003C 2145E, CLARK COUNTY, NEVADA, DATED SEPTEMBER 27, 2002, THE SITE LIES WITHIN A FEMA DESIGNATED ZONE "X". A ZONE "X" IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD.

DRAINAGE STUDY COMPLIANCE

I, JEREMY S. MCCAY, HEREBY CERTIFY THAT THIS GRADING PLAN CONFORMS TO THE APPROVED DRAINAGE STUDY ON FILE WITH THE CITY OF LAS VEGAS FOR THIS PROJECT: DS

JEREMY S. MCCAY
NEVADA P.E. NO. 15797

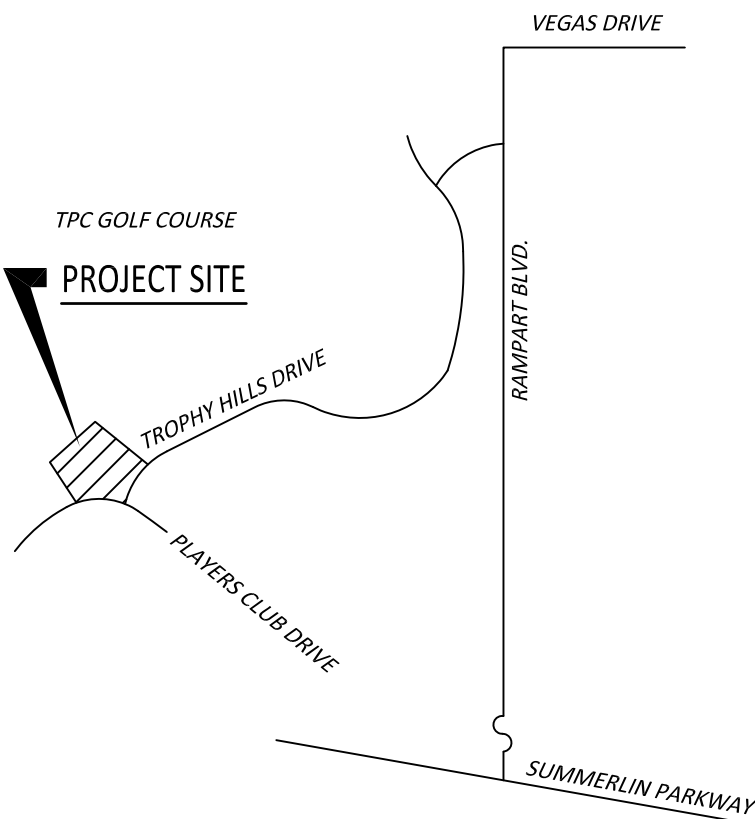
DATE

GEOTECHNICAL:

GEOTECHNICAL EVALUATION PREPARED BY:
JA CESARE AND ASSOCIATES, INC.
106 CASSIA WAY
HENDERSON, NV. 89014
DATED: FEBRUARY 17, 2010
PROJECT NO. 09.1223A
UPDATED FEBRUARY 28, 2011

EASEMENTS

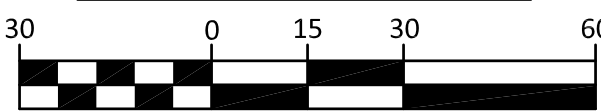
1. 15.00' EASEMENT FOR PRIVATE SIDEWALK GRANTED PER BOOK 55, PAGE 25 OF PLATS
2. 5.00' EASEMENT TO THE CITY OF LAS VEGAS FOR HYDRANT AND STREETLIGHT PURPOSES PER BOOK 55, PAGE 25 OF PLATS



VICINITY MAP

NTS

GRAPHIC SCALE



(IN FEET)
1 INCH = 30 FT.

LEGEND

- RIGHT-OF-WAY/PROPERTY LINE
- STREET CENTER LINE
- EXISTING BUILDING
- PROPOSED BUILDING
- EXISTING CURB & GUTTER
- PROPOSED CURB & GUTTER
- EXISTING EDGE OF AC
- PROPOSED ELEVATION
- EXISTING ELEVATION
- SLOPE & DIRECTION OF SLOPE
- GRADE BREAK
- GRADE BREAK
- SIGHT VISIBILITY ZONE
NOTE: NO STRUCTURE, VEGETATION, OR OBJECT OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXISTS) WITHIN THE SIGHT VISIBILITY ZONE
- PROPOSED CMU WALL
- EXISTING CMU WALL
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- CROSS SECTION

REV	DATE	BY	REVISION
1	9/6/2012	JSM	UPDATE GRADING PLAN TO EXPAND PROJECT

MCCAY ENGINEERING

11700 W. CHARLESTON BLVD.
SUITE 1100
LAS VEGAS, NV 89135
P. 702.960.3897

CIVIL ENGINEERING

THE TROPHY HILLS TRUST
RESIDENCE TRUST
300 FIRST AVENUE, SUITE 1
NEEDHAM, MA 02494-2736
TEL (781) 707-2500

901 TROPHY HILLS DRIVE

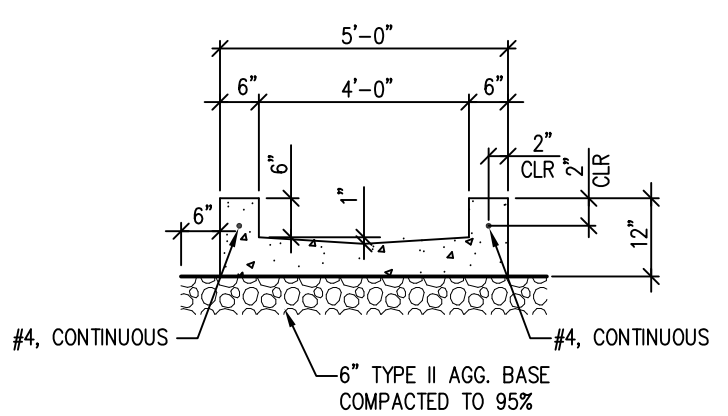
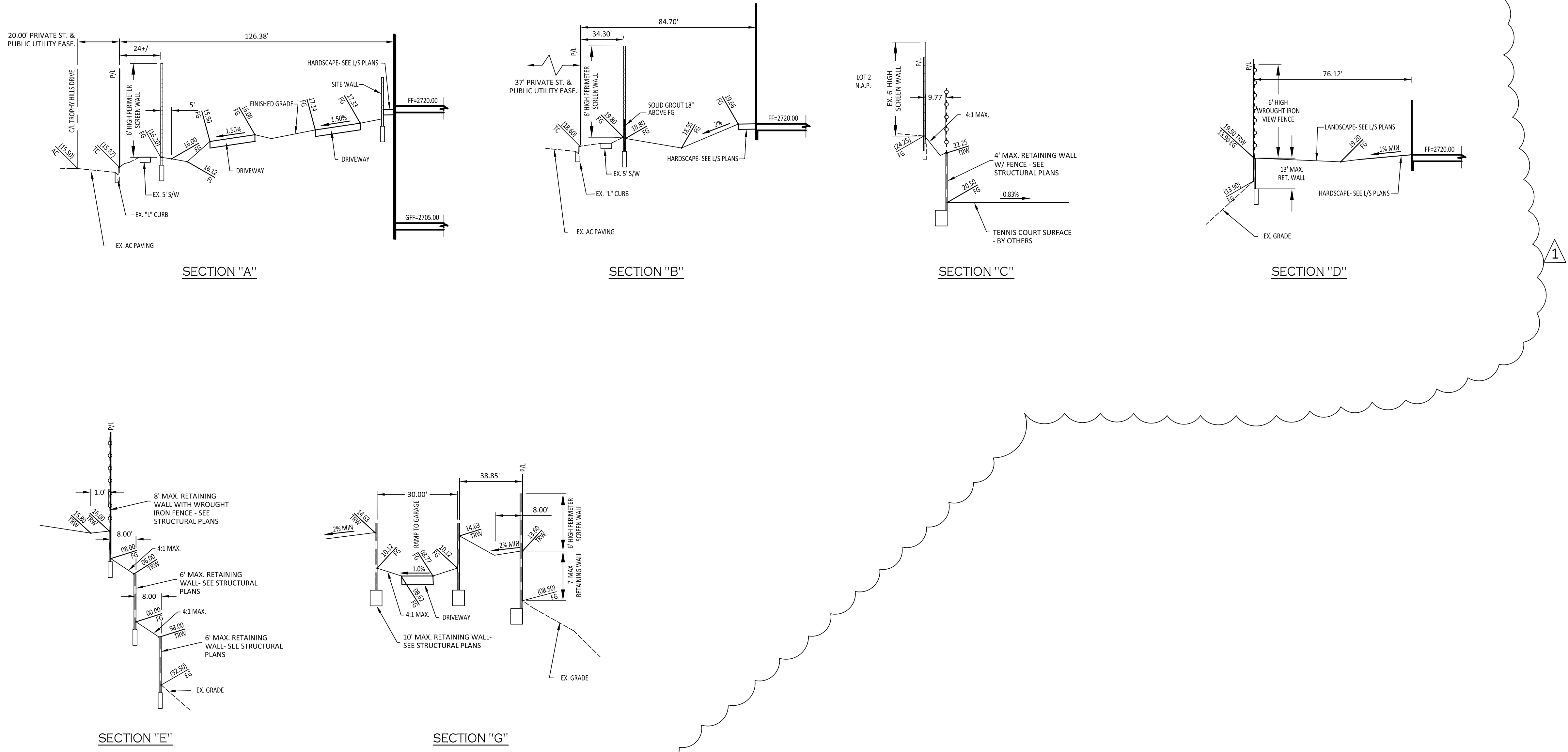
PLOT & GRADING PLAN

DATE: 9/5/2012
DRAWN BY: JSM
PROJECT MGR: JSM
PROJECT NO: 12019
SCALE: 1"=30'

PROFESSIONAL ENGINEER-STATE OF NEVADA
JEREMY S. MCCAY
Exp. 12/31/13
CIVIL

SHEET
GP1
3 OF 6 SHEETS
DRAWING NO.
107V5666

C:\JEREMY WORK\PROJECTS\12019 901 TROPHY\DWG\IMPROVEMENTS\12019 DETAIL.DWG 9/06/2012 12:29PM JEREMY



5' WIDE FLUME
SCALE: NONE

REV	DATE	BY	REVISION
1	9/6/2012	JSM	UPDATE DETAILS TO EXPAND PROJECT

MCCAY
ENGINEERING
11700 W. CHARLESTON BLVD.
SUITE 100
LAS VEGAS, NV 89135
P 702-860-3897

CIVIL
ENGINEERING

THE TROPHY HILLS DRIVE
RESIDENCE TRUST
300 FIRST AVENUE, SUITE 1
NEEDHAM, MA 02494-2736
TEL (781) 707-2500

901 TROPHY HILLS DRIVE
SECTIONS & DETAILS

DATE: 9/5/2012
DRAWN BY: JSM
PROJECT MGR: JSM
PROJECT NO: 12019
SCALE: NTS

PROFESSIONAL ENGINEER - STATE OF MASSACHUSETTS
JEREMY S. MCCAY
Exp. 12/31/13
CIVIL

SHEET
DT1
4 OF 6 SHEETS
DRAWING NO.
41673 107V5666