POWER ENGINEERS, INC.
3900 S WADSWORTH BLVD
SUITE 700
LAKEWOOD, CO 80235 USA

PHONE 303-716-8900
FAX 303-716-8980

February 3, 2025

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

Subject: 2nd Submittal DS and Plans for 24-0046

Dear Mr. Sung:

This letter and accompanying attachments are provided as the 2nd Submittal DS and Plans for 24-0046 concerning NV Energy's proposed Northwest Substation Expansion. Listed below are the City of Las Vegas' (City) nine comments received on 12/2/2024, with NV Energy's response following each comment.

Attachments to this letter include the following:

- Attachment A – 24-0046 [GPA1, ZON1, and SDR1] City Council Meeting of August 21, 2024
- Attachment B – 24-0046_Greenlink West Transmission Project_Commitment of Offsite Improvements_01-15-2025
- Attachment C – Technical Drainage Study, Improvement Plans, Standard Form 1, and Standard Form 2

Comments and Responses

1. GPA1; 24-0046-ZON1 & 24-0046-SDR1) 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.

   The zoning/planning conditions dictate what offsite street improvements will be required and this shall be addressed in the next submittal.

   NV Energy Response:

   Please refer to **Attachment A** – 24-0046 [GPA1, ZON1, and SDR1] City Council Meeting of August 21, 2024. During the August 21, 2024 public hearing, the City Council approved the General Plan Amendment, Rezoning, and Site Development Plan Review application for NV Energy's proposed Northwest Substation Expansion.

2. The site is adjacent to or crosses an existing or proposed Clark County Regional Flood Control District (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.

   Please note that effective March 15, 2019, the CCRFCD adopted new requirements for drainage study concurrence submittal. Follow the link below for specific guidance.

   http://gustfront.ccrfcd.org/LandDev/LandDev.aspx

   NV Energy Response:

   NV Energy will coordinate with the CCRFCD for concurrence.

3. The site is also adjacent to the jurisdiction of Clark County to the north. The engineer must coordinate with Clark County Public Works Department (CCPW) and incorporate any concerns for boundary conditions along Moccasin Road. CCPW concurrence is required prior to final approval of the study.

   NV Energy Response:

   NV Energy will coordinate with CCPW and address concerns for boundary conditions along Moccasin Road.

4. City of Las Vegas requires a physical copy of the drainage study (as well as a digital copy, i.e., CD or thumb drive) which includes paper printout of the study (use paper size of 8-1/2”x11”, not legal size) and the improvement plans (Improvement Plans and Drainage Maps must be in the size of 24”x36”). However, the last submittal did not have any improvement plans (paper and digital) at all!

   Provide full size improvement plans in the next submittal.

   NV Energy Response:

   A physical copy of the technical drainage study (paper size of 8-1/2”x11’’) and improvement plans and drainage maps (paper size of 24”x36”) are included in this second submittal.

5. Since no improvement plans had been submitted with the last submittal, the reviewer has nothing to base on with comments on the construction perspective. Provide improvement plans in the next submittal and review comments will be issued then.

   NV Energy Response:

   The Site Grading Plans have been included with this second submittal with comments addressed, as follows:

The comments below are listed by page number, reviewer, and date/time stamp as received by NV Energy:

Page 1

Ccrompton:

11/14/2024 6:20:46 PM – Revise signature block to: City of Las Vegas Department of Community Development Planning Division.
NV Energy Response: Signature block revised per comment.

Sboulton:

12/17/2024 10:41:50 AM – Provide a column with sheet numbering 1 through 29 and provide at bottom right corner of all sheets.
NV Energy Response: Sheet numbering provided per comment.

12/17/2024 10:42:12 AM – Sheet 1 of 29 and so on for all sheets.
NV Energy Response: Sheet numbering provided per comment.

12/17/2024 10:42:34 AM – Provide engineer's company information on cover sheet.
NV Energy Response: Engineer's company information provided per comment.

12/17/2024 11:59:59 AM – Per CLV Devco: "Please provide a covenant or agreement in lieu of a covenant per condition 12 of the 24-0046 Entitlement".
NV Energy Response: Please refer to **Attachment B** – 24-0046_Greenlink West Transmission Project_Commitment of Offsite Improvements_01-15-2025.

Page 3

Oh-Sang:

11/20/2024 8:36:20 PM – Provide following:

- DS compliance note.
  NV Energy Response: Deviation of Standards Note added per comment.
- FEMA information.
  NV Energy Response: FEMA information added per comment.
- Storm Drain management note.
  NV Energy Response: Stormwater Management Notes added per comment.

11/20/2024 8:37:32 PM – Provide public drainage easement to be privately maintained for any facility for offsite flow.
NV Energy Response: This has been provided in the updated drawings.

Pages 10, 11, 12, 13, 14

Sboulton

12/17/2024 11:46:59 through 11:47:31 AM – Provide a key map showing each sheet with the current sheet highlighted.
NV Energy Response: The key map showing each sheet with current sheet highlighted has been provided in the updated drawings on Pages 10 through 14 per comment.

6. A technical drainage study must include a filled-in Standard Form 1 and Standard Form 2 which contains the developer and engineer as well as the project information. The form can be downloaded using the link below:

   https://files.lasvegasnevada.gov/public-works/Minimum-Drainage-Study-Checklist.pdf

   NV Energy Response:

   Please refer to **Attachment C**, which includes the Technical Drainage Study, Standard Form 1, and Standard Form 2.

7. EXB 1 (Existing Drainage Basin Overview) and EXB 3 (Proposed Drainage Basin Overview): At the western end of the offsite basins (E-1, E-2, E-3 and F-1), it is not understood why an extended triangular area until a tip point is not considered as portion of the offsite basins even though the area is relatively small? Address and resolve in the next submittal.

   NV Energy Response:

   As discussed with the City reviewer during the 12/19/2024 conference call, the drainage boundaries were drawn in that fashion and end at an improved roadway. This has not been adjusted due to the agreement during the 12/19/2024 conference call that the drainage boundaries design are following standard engineering practices.

8. Per Figure E-2 (Existing Drainage Conditions) of the "City of Las Vegas Northwest Neighborhood Flood Control Master Plan Phase 2 (Vol. II September 1999)", the anticipated 100-year flow in Moccasin Road without any regional flood control facilities, i.e., on the surface, is about 488 CFS. Revise all pertinent Drainage Maps (existing, interim and future), hydrologic and hydraulic calculations and summary tables etc. accordingly.

   Provide 10-year/100-year flow information such as Q10/Q100, V10/V100 and D10/D100 in all the perimeter streets (Moccasin Road, Puli Road, Rocky Road, and Shaumber Road) in all the pertinent drainage maps in the next submittal.

NV Energy Response:

As discussed with the City reviewer during the 12/19/2024 conference call, all off-site improvements have been deferred and the drainage report does not need to incorporate improvements that are not going to be designed or built.

9. A site visit conducted by the reviewer revealed that the proposed storm drain in Moccasin Road during the original phase improvement appear to have not been constructed. If this is the case, the current phase of expansion shall include the storm drain. Include the storm drain in Moccasin Road in the current set of improvement plans in the next submittal.

NV Energy Response:

As discussed with the City reviewer during the 12/19/2024 conference call, all of the proposed right-of-way dedications and boundary conditions are shown and addressed in the IFC Construction Set. Also, as addressed during the 12/19/2024 conference call, off-site improvements have been deferred and no additional drains within Moccasin Road are required.

Should you have questions or comments concerning the information provided in this 2nd submittal, please contact me at (303) 842-7104 or via email at charles.hutchinson@powereng.com.

Sincerely,

Charles Hutchinson, AICP
Senior Environmental Planner

c: Oh-Sang Kwon (City of Las Vegas)
Gosia Nordyke (NV Energy)
Peter Simpson (POWER)
Hank Lonberg (POWER)

ATTACHMENT A

24-0046 [GPA1, ZON1, and SDR1]
City Council Meeting of August 21, 2024

August 22, 2024

Li Zhang
NV Energy
P.O. Box 98910 MS-10
Las Vegas, Nevada 89151

RE: 24-0046 [GPA1, ZON1, AND SDR1]
CITY COUNCIL MEETING OF AUGUST 21, 2024

Dear Applicant:

The City Council at a regular meeting held on ***August 21, 2024*** voted to ***APPROVE*** the following Land Use Entitlement project requests on a 14.83-acre portion of 38.20 acres at 10625 Moccasin Road (APNs 126-01-101-001 and 017), Ward 6 (Brune). The Planning Commission (7-0 vote) and Staff recommend APPROVAL on the entire Land Use Entitlement project.

24-0046-GPA1 - GENERAL PLAN AMENDMENT - FROM: PCD (PLANNED COMMUNITY DEVELOPMENT) TO: PF (PUBLIC FACILITY) [APN 126-01-101-001]

24-0046-ZON1 - REZONING - FROM: U (UNDEVELOPED) [PCD (PLANNED COMMUNITY DEVELOPMENT) GENERAL PLAN DESIGNATION] TO: C-V (CIVIC) [APN 126-01-101-001]

24-0046-SDR1 - SITE DEVELOPMENT PLAN REVIEW - FOR A MAJOR AMENDMENT TO AN APPROVED SITE DEVELOPMENT PLAN REVIEW (SDR-34710) FOR THE PROPOSED EXPANSION OF AN EXISTING ELECTRIC UTILITY SUBSTATION

This approval is subject to the following conditions:

24-0046-SDR1 CONDITIONS:

Planning

1. Approval of General Plan Amendment (24-0046-GPA1) and Rezoning (24-0046-ZON1) shall be required, if approved.

2. Conformance to the Conditions of Approval for Site Development Plan Review (SDR-34710), except where amended herein.

3. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.

4. All development shall be in conformance with the site plan and building elevations date stamped 05/16/24, except as amended by conditions herein.

5. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Building and Safety Division.

6. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

7. The applicant shall coordinate with the City Surveyor and other city staff to determine the most appropriate mapping action necessary to consolidate the existing lots. The mapping action shall be completed and recorded prior to the issuance of any building permits.

8. Pursuant to LVMC Title 19.08.040.G for commercial and industrial properties, a perimeter wall shall be constructed adjacent to any residential zoning district or property used solely for residential purposes. The wall or fence is intended to screen the commercial or industrial activity from the residential property, and shall be of a solid decorative material that is a minimum of six feet in height measured from the side of the commercial or industrial property. In no case shall the wall or fence exceed the overall height limitation applicable to the adjacent zoning district or property unless approved through a Variance or other applicable means. The overall height of a wall or fence shall be measured from the side with the greatest vertical exposure above finished grade.

9. All City Code requirements and design standards of all City Departments must be satisfied, except as modified herein.

Public Works

10. Per Title 13.12, dedicate 60 feet of right-of-way for Moccasin Road and 40 feet for Puli Road along with a 20-foot radius at the southeast corner of Puli Road and Moccasin Road adjacent to Assessor's Parcel Number 126-01-101-001 prior to the issuance of permits for this site.

11. Unless otherwise allowed by the City Engineer, submit all required documentation and support materials to the Right of Way Section of the Department of Public Works for a Bureau of Land Management (BLM) Grant application to obtain a Roadway, Sewer and Drainage Grant for the south side of Moccasin Road and the north side of Rocky Avenue adjacent to Assessor's Parcels #126-01-101-016 and #126-01-101-017 prior to issuance of permits for this site. Civil Plans may be approved without the grant being authorized; however no construction of City-owned or maintained facilities within the City Roadway, Sewer, and Drainage Grant area on Assessor's Parcels #126-01-101-016 and #126-01-101-017 may occur until the grant is authorized by BLM and recorded by the Right of Way section of the Department of Public Works. Applicant may perform construction activities within Applicant's previously approved and BLM-administered grant area.

12. Sign and record a Covenant Running with Land agreement for the possible future installation of half-street improvements (including curb and gutter, sidewalks, streetlighting, permanent paving, all appurtenant underground facilities for future traffic signals and possibly fire hydrants and sewers) on Moccasin Road, Puli Road, and Rocky Avenue adjacent to this site prior to the issuance of any permits as required by the Department of Public Works. In lieu of a covenant, a letter to the City of Las Vegas on corporate letterhead indicating the future commitment to construct all offsite improvements as needed within one year after the receipt of a written notice from the Director of Public Works to do so shall suffice as required by the Department of Public Works.

13. All landscaping and private improvements installed with this project 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.

14. 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 or submittal of any construction drawings, 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. We note that a large-scale flood conveyance facility is proposed along the northern boundary of this site and that the applicant should contact the Flood Control Section of the Department of Public Works to obtain more information about this project.

The Notice of Final Action was filed with the Las Vegas City Clerk on August 22, 2024.

Sincerely,

Seth T. Floyd
Director of Community Development
Department of Planning

STF:PL:bp

cc:

Charles Hutchinson
POWER Engineers, Inc
3900 South Wadsworth Boulevard, Suite 700
Lakewood, Colorado 80235

ATTACHMENT B

24-0046_Greenlink West Transmission Project_
Commitment of Offsite Improvements_01-15-2025

January 15, 2025

Mr. Lucien Paet, P.E., MBA
Engineering Project Manager
Department of Public Works – Transportation Engineering
City of Las Vegas
495 South Main Street
Las Vegas, NV 89101

Subject: #24-0046: Greenlink West Transmission Project – Commitment to Construct Off-Site Improvements

Dear Lucien:

Sierra Pacific Power Company and Nevada Power Company, both doing business as NV Energy ("NV Energy"), propose to construct a portion of the Greenlink West Transmission Project ("Project") in the City of Las Vegas, Nevada ("City"). The Project includes the proposed expansion of NV Energy's existing Northwest Substation in the northwest portion of the City. The proposed expansion of Northwest Substation includes a future commitment to construct off-site improvements, as detailed below.

During a public hearing on August 21, 2024, the Las Vegas City Council approved NV Energy's application for a General Plan Amendment, Rezoning, and Site Development Plan review for the Northwest Substation Expansion. On August 22, 2024, the City Council issued the approval, which is subject to conditions agreed upon by NV Energy and the City. Condition 12 from the City's Department of Public Works states the following:

> 12. Sign and record a Covenant Running with Land agreement for the possible future installation of half-street improvements (including curb and gutter, sidewalks, streetlighting, permanent paving, all appurtenant underground facilities for future traffic signals and possibly fire hydrants and sewers) on Moccasin Road, Puli Road, and Rocky Avenue adjacent to this site prior to the issuance of any permits as required by the Department of Public Works. In lieu of a covenant, a letter to the City of Las Vegas on corporate letterhead indicating the future commitment to construct all off-site improvements as needed within one year after the receipt of a written notice from the Director of Public Works to do so shall suffice as required by the Department of Public Works.

On April 17, 2024, the Department of Public Works approved NV Energy's Administrative Deferred Off-site Improvement Request for Single Family Residences. However, NV Energy understands that a commitment to construct the off-site improvements noted in Condition 12 is required and will commit to constructing the off-site improvements within one year after receipt of written notice from the Director of Public Works to do so. The Administrative Deferred Off-site Improvement Request stemmed from the Department of Public Works' Traffic Engineering review of the Site Development Plan. During the Pre-Application review stage, Traffic Engineering provided the following comment:

> "The west side of the site is Puli Road, an 80' Master Planned street, and the south side of the site is Rocky Avenue, a 60' Master Planned street. Construction of improvements on these streets is required. The applicant may apply for a deferral of the construction of these improvements."

In summary, NV Energy will commit to constructing the off-site improvements noted above in Condition 12 within one year after receipt of written notice from the Director of Public Works to do so.

Should you have questions, please contact Charles Hutchinson at (303) 842-7104 or via email at charles.hutchinson@powereng.com.

Sincerely,

Adam Godorov, P.E., PMP
Project Engineering Director
Transmission Development

cc: Charles Hutchinson (POWER)

ATTACHMENT C

Technical Drainage Study, Improvement Plans,
Standard Form 1, and Standard Form 2

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: NORTHWEST SUBSTATION EXPANSION Date: 5/16/2024

Location of Development: a) Descriptive (Cross Streets) North/South: SHAUMBER RD AND PULI RD

East/West: MOCCASIN RD AND ROCKY RD

b) Section: 01 Township: 19S Range: 59E

c) APN : 12601101001, 12601101002, 12601101003, 12601101004, 12601101016, 12601101017

Name of Owner: NV ENERGY

Telephone No.: (702) 402-1122 Fax No.: E-Mail Address: Adam.Godorov@nvenergy.com

Address: P.O. Box 98910 MS-10 Las Vegas, NV 89151

Contact Person-Name: Charles Hutchinson **Telephone No.:** (303) 842-7104

* **E-Mail Address:** charles.hutchinson@powereng.com **Fax No.:**

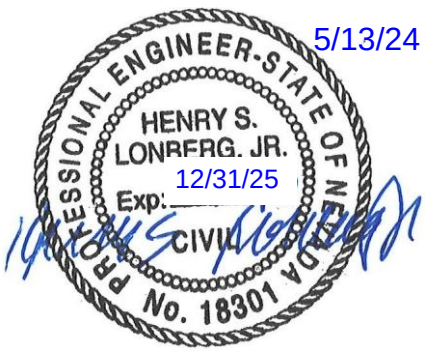
Firm: POWER Engineers, Inc.

Address: 3900 South Wadsworth Boulevard Suite 700, Lakewood, CO 80235

Type of Land Development/Land Disturbance Process:

x	Rezoning		Subdivision Map	x	Clearing and Grading Only
	Parcel Map		Planned Unit Development	x	Other (Please specify below)
	Large Parcel Map		Building Permit		General Plan Amendment

1. Total Owned Land Area: At Site: 38.2 ACRES Being Developed/Disturbed: 15.63 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.): EXPANSION TO EXISTING ELECTRICAL SUBSTATION
5. Approximate upstream land area which drains to the subject site: 147.5 ACRES
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: DS4337 Technical Drainage Study prepared by LOCHSA ENGINEERING, Job #081085, dated November 2009
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: All discharge points on the site are to maintain their historical flow paths. A proposed concrete lined channel along the western boundary of the site will capture off-site runoff before it enters the site and will route flow around the perimeter, discharging to the NE of the site along Moccasin Ave. All new, on-site runoff will discharge at the same location.
8. Briefly describe your proposed schedule for the subject project: Construction is anticipated to begin at the end of 2024 and run through 2025.



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.**

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Greenlink West Transmission Project - Northwest Substation Expansion	Map ID:
Firm Name: POWER Engineers, Inc.	Engineer: Bryan Samson, Peter Simpson, Hank Lonberg
Address: 3900 South Wadsworth Boulevard Suite 700 City: Lakewood State: CO Zip: 80235	
Phone Number: (303) 842-7104	Fax Number:
Property Owner: NV Energy	
Address: P.O. Box 98910 MS-10 City: Las Vegas State: NV Zip: 89151	

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

Yes	No	
x		Design Manual **Standard Form 1** with the engineer's seal and signature.
	N/A	Design Manual **Standard Form 4**.
x		2 copies of the 24" x 36" Drainage Plan.
	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.

II. MAPS AND EXHIBITS

Yes	No	
X		A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
X		A copy of the current CCRFCD Master Plan Update Figure, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

Yes	No	
X		Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
X		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.
X		Vicinity Map with local and major cross streets identified and a north arrow.

III. DRAINAGE PLAN

Yes	No	
X		Sheet size: 24" x 36" sealed by a registered engineer in the State of Nevada.
X		Minimum scale: 1" = 60'.
X		Project name.
X		Vicinity Map with local and major cross streets.
X		Revision box.
X		North arrow and bar scale.
X		Engineer's/consultant's address and phone number.
X		Elevation datum and benchmark.
X		Legend for symbols and abbreviations.
	N/A	Cut/fill scarps, where applicable.
	N/A	Street names, grades, widths.
	N/A	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.
X		Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
	N/A	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
	N/A	Proposed typical street sections.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
	N/A	Streets with off-set crowns.
X		Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
X		Property lines.
X		Right-of-way lines and widths, existing and proposed.
X		Existing improvements and their elevations.
X		Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
	N/A	Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
X		Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
	N/A	Location and cross-section of street capacity calculations.
X		Cross-sectional detail for channels, including cutoff wall locations.
X		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.
	N/A	Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
X		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.
	N/A	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.
X		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.
	N/A	Building and/or lot numbers.
	N/A	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
X		Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
	N/A	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.
	N/A	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.
	N/A	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
	N/A	Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Yes	No	
X		Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
X		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.
X		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.
X		Use of correct precipitation values in and around the McCarran Airport rainfall area.
X		A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
X		A summary table of stormwater flows showing basin area, Q_{10} and Q_{100} for both individual basins and combined basin flows, where applicable.
X		Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
X		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners in accordance with current Nevada Drainage Law.
	N/A	Calculation for impervious area for parking lots and LIDs (if required).

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

Yes	No	
	N/A	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
	N/A	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} d x v $\leq$ 8. Q_{10} d x v $\leq$ 6 and 12 foot dry lane for rights-of-way $\geq$ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
	N/A	A summary table of interior and exterior street capacity calculations showing the street name, Q_{100} flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
X		Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
	N/A	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.
	N/A	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, whichever is greater.
X		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.
	N/A	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
	N/A	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.
X		The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
	N/A	Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:	**STANDARD FORM 2**