



Board of Adjustment Staff Report

Meeting Date: February 4, 2016

Subject: Special Use Permit Case Number SB15-010
Applicant: Barry Iremonger
Agenda Item Number: 8E
Project Summary: Major Grading for construction of a permanent earthen structure twenty-two feet in height and importation of approximately 900 cubic yards of earthen material
Recommendation: Approval with Conditions
Prepared by: Roger Pelham, MPA, Senior Planner
Planning and Development Division
Washoe County Community Services Department
Phone: 775.328.3622
E-Mail: rpelham@washoecounty.us

Description

Special Use Permit Case Number SB15-010 (Iremonger Grading) – Hearing, discussion, and possible action to approve Major Grading for construction of a permanent earthen structure greater than six feet in height on a residential parcel of land. The overall height is proposed to be twenty-two feet above existing grade; it will require the importation of approximately 900 cubic yards of earthen material and includes approximately 14,000 square feet of disturbance.

- Applicant/Property Owner: Barry Iremonger
9695 Passa Tempo Drive
Reno, NV 89511
- Location: 9695 Passa Tempo Drive, on the west side of the road and approximately 4/10 of a mile south of its intersection with Holcomb Ranch Lane
- Assessor's Parcel Number: 044-401-03
- Parcel Size: ± 2.53 Acres
- Master Plan Category: Rural Residential (RR)
- Regulatory Zone: High Density Rural (HDR)
- Area Plan: Southwest Truckee Meadows
- Citizen Advisory Board: South Truckee Meadows/Washoe Valley
- Development Code: Authorized in Article 438, Grading Standards and Article 810, Special Use Permits.
- Commission District: 2 – Commissioner Lucey
- Section/Township/Range: Section 7, T18N, R20E, MDM,
Washoe County, NV

Staff Report Contents

Project Description 1

Special Use Permit 3

Vicinity Map 4

Site Plan 5

Project Evaluation 8

South Truckee Meadows / Washoe Valley Citizen Advisory Board (STMWVCAB)..... 8

Public Notice 8

Reviewing Agencies..... 8

Recommendation.....10

Motion.....10

Appeal Process.....11

Exhibits Contents

Conditions of ApprovalExhibit A

Agency Comments.....Exhibit B

Public Notice Map Exhibit C

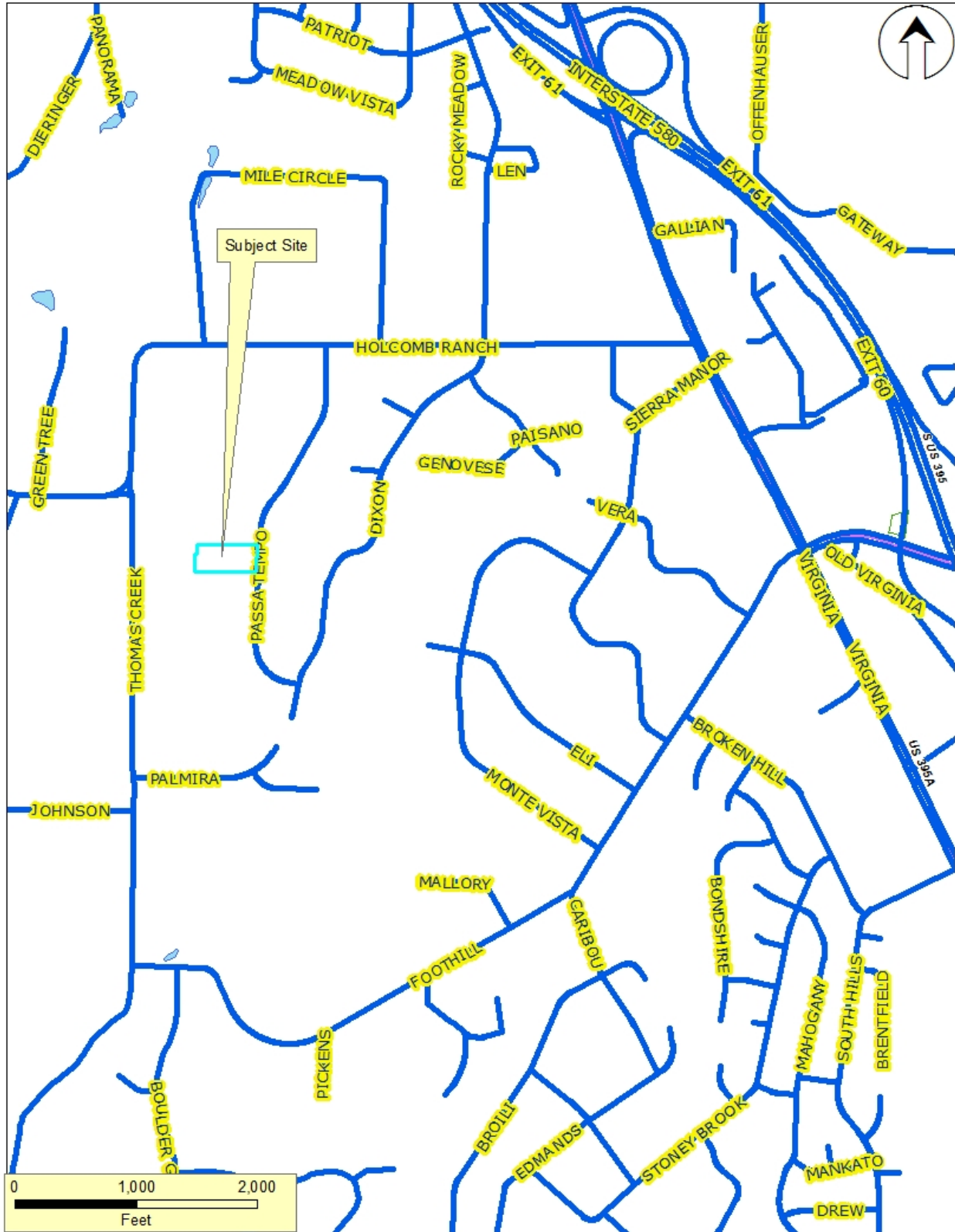
Project Application Exhibit D

Special Use Permit

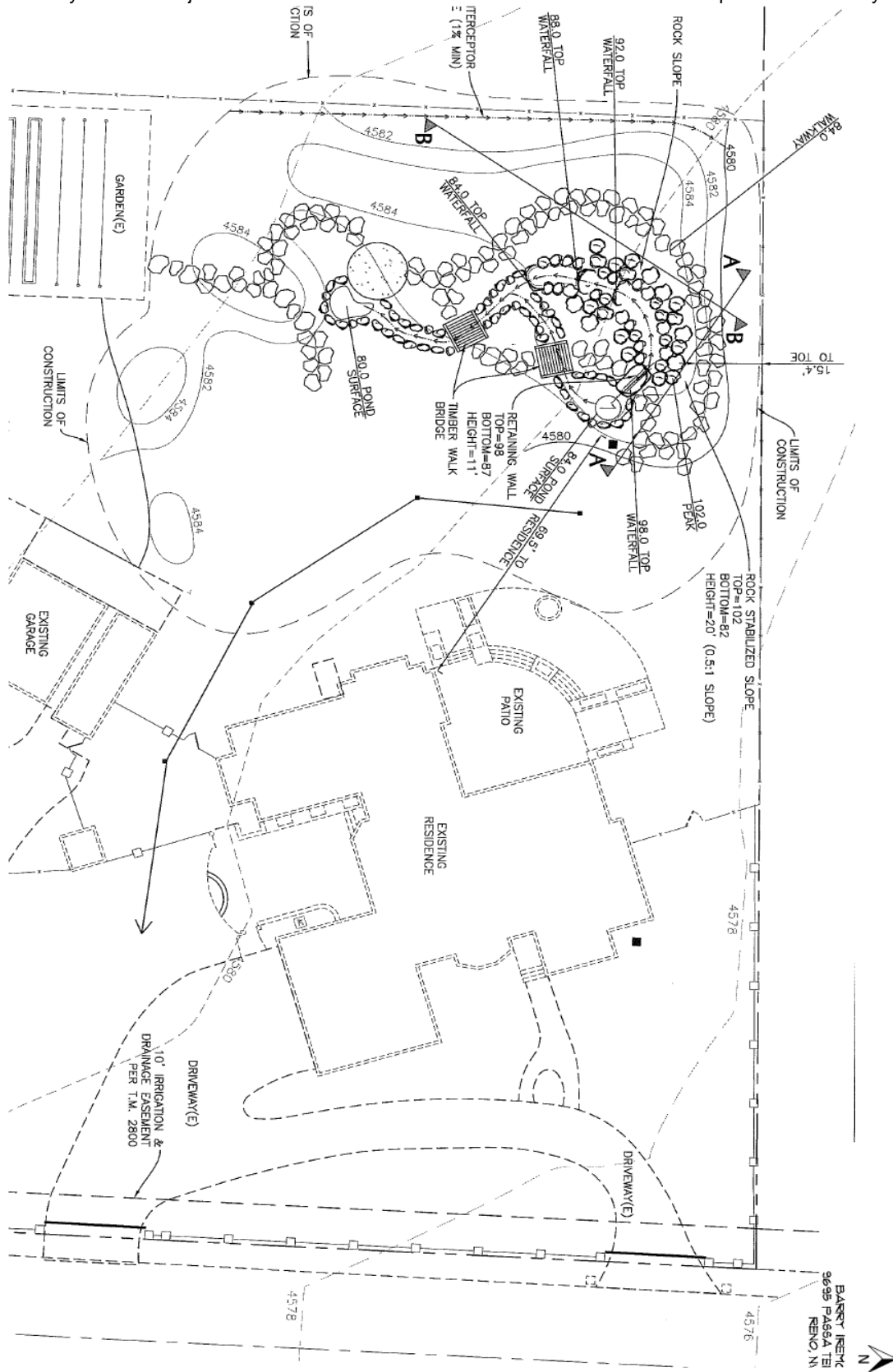
The purpose of a Special Use Permit is to allow a method of review to identify any potential harmful impacts on adjacent properties or surrounding areas for uses that may be appropriate within a regulatory zone; and to provide for a procedure whereby such uses might be permitted by further restricting or conditioning them so as to mitigate or eliminate possible adverse impacts. If the Board of Adjustment grants an approval of the Special Use Permit, that approval is subject to Conditions of Approval. Conditions of Approval are requirements that need to be completed during different stages of the proposed project. Those stages are typically:

- Prior to permit issuance (i.e. a grading permit, a building permit, etc.)
- Prior to obtaining a final inspection and/or a certificate of occupancy on a structure
- Prior to the issuance of a business license or other permits/licenses
- Some Conditions of Approval are referred to as “Operational Conditions.” These conditions must be continually complied with for the life of the business or project.

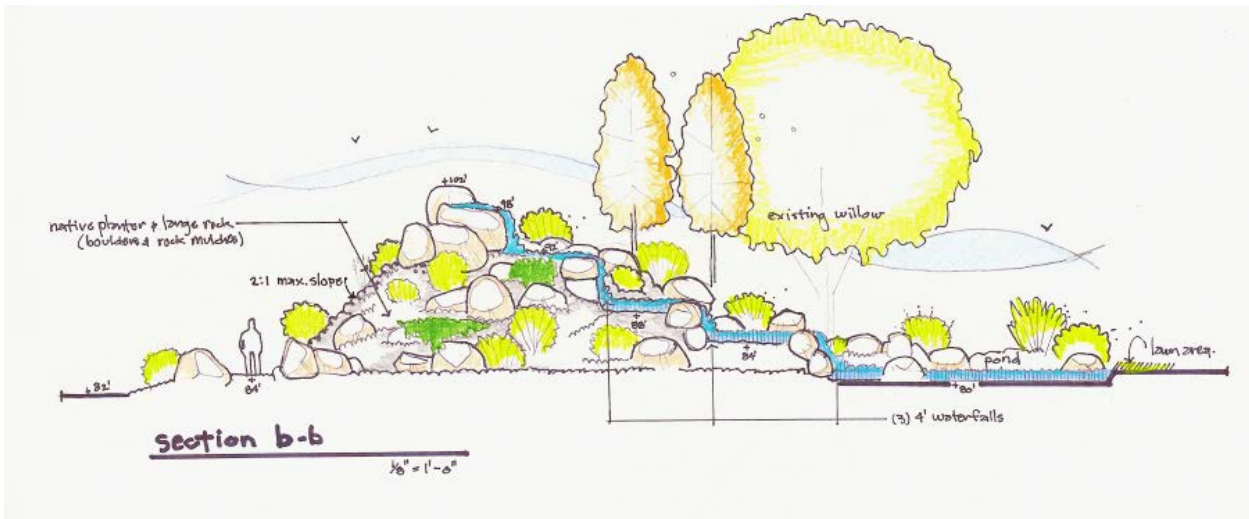
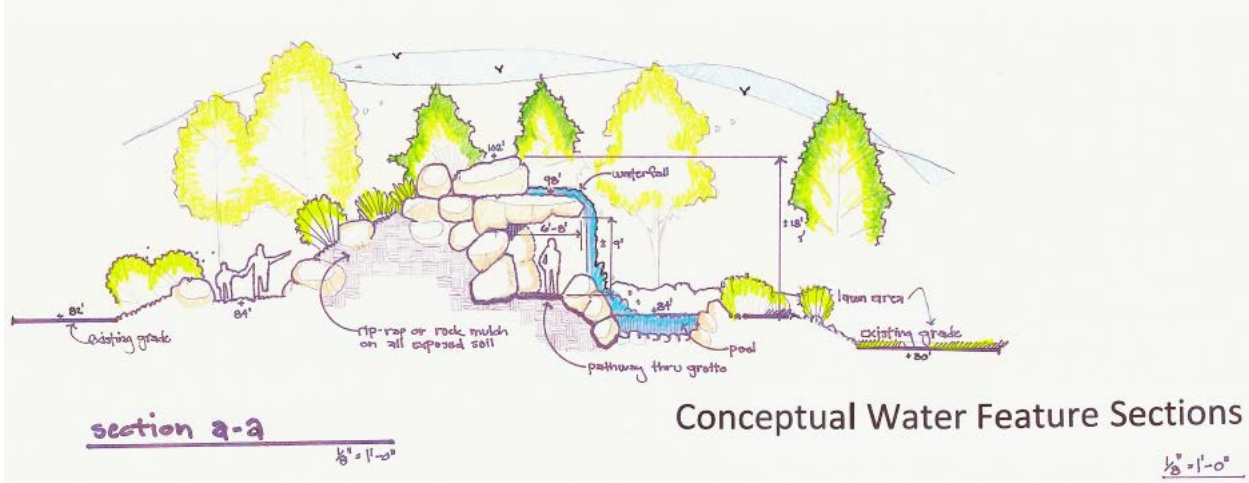
The Conditions of Approval for Special Use Permit Case Number SB15-010 are attached to this staff report and will be included with the Action Order, if the Special Use Permit is approved by the Board of Adjustment.

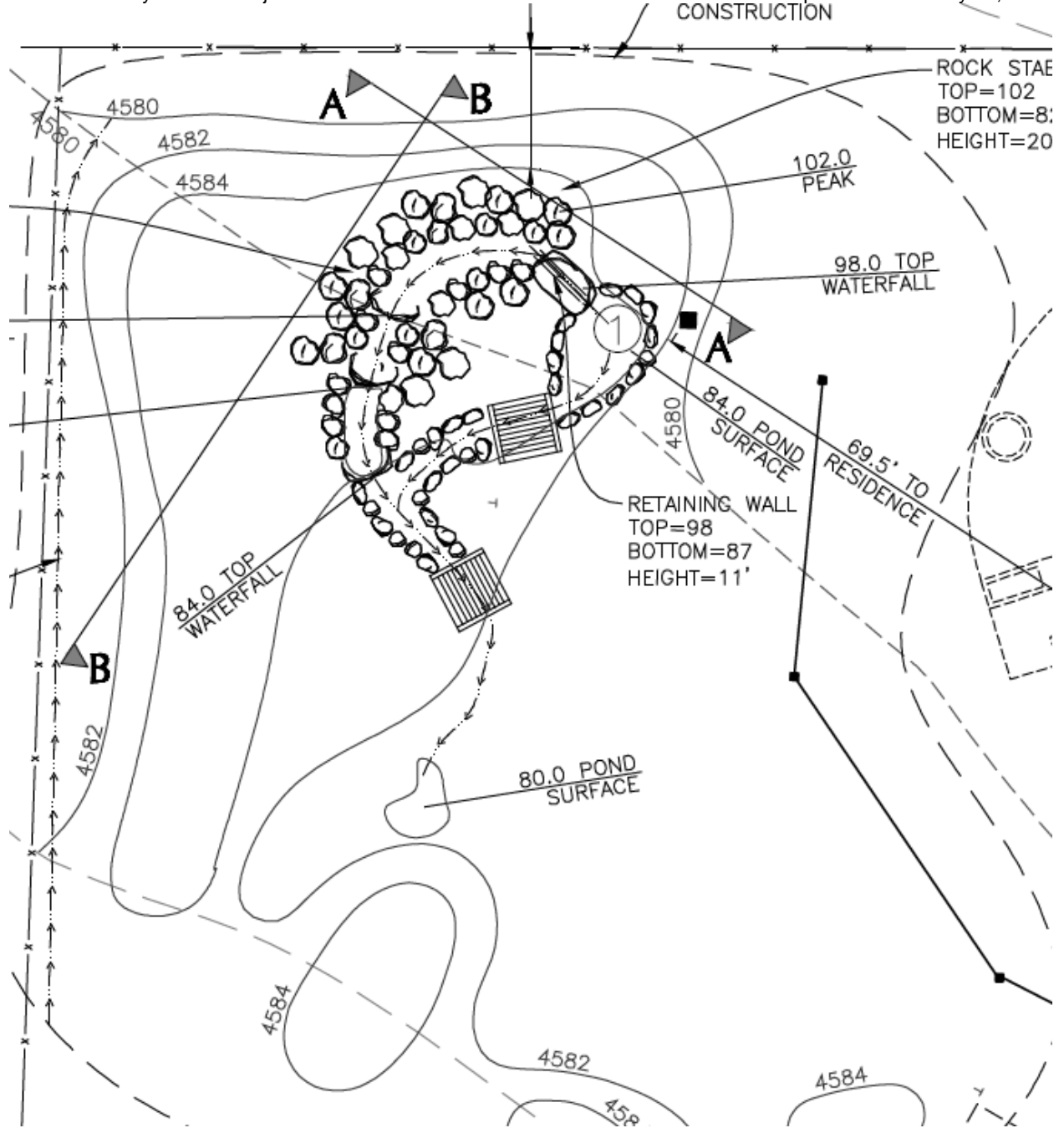


Vicinity Map



Site Plan





Detail of Grading and Rockery Wall Locations

Project Evaluation

The applicant is seeking approval for Major Grading to construct a permanent earthen structure greater than six feet in height on a residential parcel of land. The overall height of the earthen structure is proposed to be 22 feet above existing grade. It will require the importation of approximately 900 cubic yards of earthen material and include 14,000 square-feet of disturbance. The purpose of the permanent earthen structure is to be an ornamental landscape feature which includes ponds, waterfalls, and rockery walls.

The project area is located behind the existing dwelling and will be visible from the rear yards of several adjacent dwellings. There are certain aspects of the plans submitted that do not comply with the requirements of the grading code. Conditions of approval have been proposed to highlight those existing Code requirements including:

- All final slopes shall be at a ratio of three horizontal to one vertical (3H:1V) or shallower.
- Rip-rap slopes are prohibited.

The proposed permanent earthen structure is primarily ornamental in nature, but there are visual impacts that may be anticipated to adjacent property owners. To address the anticipated visual impacts conditions of approval have been proposed, including:

- Temporary construction fencing shall be installed five feet from the north property line and no activity will take place within that five feet.
- Construction plans shall be based upon an accurate survey of the project area and shall be submitted by an Engineer licensed in Nevada.
- No earthen fill greater than six feet above existing grade shall be allowed within 22 feet (the overall height of the earthen structure) of the northern property line.

Subject to the conditions outlined above, and the standard conditions of approval for special use permits for grading, staff believes that the Board of Adjustment may make the required findings of fact in support of approval of the request.

South Truckee Meadows/Washoe Valley Citizen Advisory Board (STM/WV CAB)

The proposed project was discussed at the regularly scheduled STM/WV Citizen Advisory Board meeting on January 14, 2016. The CAB voted to recommend approval of the project, but expressed concerns regarding visual impact upon the adjacent property owner and the loss of water to evaporation from the proposed water feature.

Public Notice

This special use permit request was noticed to affected property owners in accordance with the requirements of Article 810 of the Development Code. The noticing map is attached as Exhibit C to this report.

Reviewing Agencies

The following agencies received a copy of the project application for review and evaluation.

- Washoe County Community Services Department
 - Planning and Development Division
 - Engineering and Capitol Projects Division
 - Building and Safety Division
- Washoe County Health District
 - Vector-Borne Diseases Program
 - Environmental Health Services Division
 - Air Quality Management Division
- Truckee Meadows Fire Protection District
- Washoe – Storey Conservation District
- Regional Transportation Commission

Two out of the ten above listed agencies/departments provided comments and/or recommended conditions of approval in response to their evaluation of the project application. A **summary** of each agency's comments and/or recommended conditions of approval and their contact information is provided. The Conditions of Approval document is attached to this staff report and will be included with the Action Order.

- Washoe County Planning and Development addressed the requirements of the Grading Code and possible visual impacts.
Contact: Roger Pelham, 775.328.3622, rpelham@washoecounty.us
- Washoe County Engineering provided standard conditions requiring complete construction drawings.
Contact: Leo Vesely, 775.328.2040, lvesely@washoecounty.us

Staff Comment on Required Findings

Washoe County Code Section 110.810.30 requires that all of the following findings be made to the satisfaction of the Washoe County Board of Adjustment before granting approval of the request. Staff has completed an analysis of the special use permit application and has determined that the proposal is in compliance with the required findings as follows.

1. Consistency. That the proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the Southwest Truckee Meadows Area Plan.

Staff Comment: Major Grading for a permanent earthen structure greater than six feet in height is permissible subject to the approval of a special use permit.

2. Improvements. That adequate utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made in accordance with Division Seven.

Staff Comment: Major Grading for a permanent earthen structure greater than six feet in height will not create additional demand for utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities.

3. Site Suitability. That the site is physically suitable for Major Grading for a permanent earthen structure greater than six feet in height and for the intensity of such a development.

Staff Comment: The site is currently essentially flat and the Major Grading for a permanent earthen structure greater than six feet in height is intended to create an artificial topographic feature.

4. Issuance Not Detrimental. That issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area.

Staff Comment: Subject to the conditions of approval as recommended and to mitigate the identified potential impact, the Major Grading for a permanent earthen structure greater than six feet in height will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties, or detrimental to the character of the surrounding area.

5. Effect on a Military Installation. Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.

Staff Comment: There is no military installation within the required noticing distance for this request, therefore this finding is not required to be made.

Recommendation

Those agencies which reviewed the application recommended conditions in support of approval of the project. Therefore, after a thorough analysis and review, Special Use Permit Case Number SB15-010 is being recommended for approval with conditions. Staff offers the following motion for the Board's consideration.

Motion

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Board of Adjustment approve with the condition, included as Exhibit A to this staff report, the Special Use Permit Case Number SB15-010 for Barry Iremonger, having made all four findings in accordance with Washoe County Development Code Section 110.810.30.

1. Consistency. That the proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the Southwest Truckee Meadows Area Plan.
2. Improvements. That adequate utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made in accordance with Division Seven.
3. Site Suitability. That the site is physically suitable for Major Grading for a permanent earthen structure greater than six feet in height, and for the intensity of such a development.
4. Issuance Not Detrimental. That issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area.

Appeal Process

Board of Adjustment action will be effective 10 calendar days after the written decision is filed with the Secretary to the Board of Adjustment and mailed to the applicant, unless the action is appealed to the Washoe County Board of Commissioners, in which case the outcome of the appeal shall be determined by the Washoe County Board of Commissioners. Any appeal must be filed in writing with the Planning and Development Division within 10 calendar days after the written decision is filed with the Secretary to the Board of Adjustment and mailed to the applicant.

xc: Applicant: Barry Iremonger
9695 Pasa Tempo Drive
Reno, NV 89511

Property Owner: Barry Iremonger
9695 Pasa Tempo Drive
Reno, NV 89511

Consultant: Gail Willey Landscaping
Attn: Tom Schuster
9825 S. Virginia Street
Reno, NV 89511

Representatives: K2 Engineering
Attn: Brandt Kennedy
3100 Mill Street #107
Reno, NV 89502



Conditions of Approval

Special Use Permit Case Number SB15-010

The project approved under Special Use Permit Case Number SB15-010 shall be carried out in accordance with the Conditions of Approval granted by the Board of Adjustment on February 4, 2016. Conditions of Approval are requirements placed on a permit or development by each reviewing agency. These Conditions of Approval may require submittal of documents, applications, fees, inspections, amendments to plans, and more. These conditions do not relieve the applicant of the obligation to obtain any other approvals and licenses from relevant authorities required under any other act or to abide by all other generally applicable Codes, and neither these conditions nor the approval by the County of this project/use override or negate any other applicable restrictions on uses or development on the property.

Unless otherwise specified, all conditions related to the approval of this Special Use Permit shall be met or financial assurance must be provided to satisfy the Conditions of Approval prior to issuance of a grading or building permit. The agency responsible for determining compliance with a specific condition shall determine whether the condition must be fully completed or whether the applicant shall be offered the option of providing financial assurance. All agreements, easements, or other documentation required by these conditions shall have a copy filed with the County Engineer and the Planning and Development Division.

Compliance with the Conditions of Approval related to this Special Use Permit is the responsibility of the applicant, his/her successor in interest, and all owners, assignees, and occupants of the property and their successors in interest. Failure to comply with any of the conditions imposed in the approval of the Special Use Permit may result in the initiation of revocation procedures.

Washoe County reserves the right to review and revise the Conditions of Approval related to this Special Use Permit should it be determined that a subsequent license or permit issued by Washoe County violates the intent of this approval.

For the purpose of conditions imposed by Washoe County, “may” is permissive and “shall” or “must” is mandatory.

Conditions of Approval are usually complied with at different stages of the proposed project. Those stages are typically:

- Prior to permit issuance (i.e., grading permits, building permits, etc.).
- Prior to obtaining a final inspection and/or a certificate of occupancy.
- Prior to the issuance of a business license or other permits/licenses.
- Some “Conditions of Approval” are referred to as “Operational Conditions.” These conditions must be continually complied with for the life of the project or business.

The Washoe County Commission oversees many of the reviewing agencies/departments with the exception of the following agencies.

- **The DISTRICT BOARD OF HEALTH, through the Washoe County Health District, has jurisdiction over all public health matters in the Health District.**

Any conditions set by the Health District must be appealed to the District Board of Health.

FOLLOWING ARE CONDITIONS OF APPROVAL REQUIRED BY THE REVIEWING AGENCIES. EACH CONDITION MUST BE MET TO THE SATISFACTION OF THE ISSUING AGENCY.

Washoe County Planning and Development Division

1. The following conditions are requirements of the Planning and Development Division, which shall be responsible for determining compliance with these conditions.

Contact Name: Roger Pelham, 775.328-3622, rpelham@washoecounty.us

- a. The applicant shall demonstrate substantial conformance to the plans approved as part of this special use permit. The Planning and Development Division shall determine compliance with this condition.
- b. The applicant shall submit complete construction plans and building (grading) permits shall be issued within two years from the date of approval by Washoe County. The applicant shall complete construction within the time specified by the building (grading) permits.
- c. The applicant shall attach a copy of the action order approving this project to all administrative permit applications (including building permits) applied for as part of this administrative permit.
- d. A note shall be placed on all construction drawings and grading plans stating:

NOTE

Should any prehistoric or historic remains/artifacts be discovered during site development, work shall temporarily be halted at the specific site and the State Historic Preservation Office of the Department of Museums, Library and Arts shall be notified to record and photograph the site. The period of temporary delay shall be limited to a maximum of two (2) working days from the date of notification.

- e. All final slopes shall be at a ratio of three horizontal to one vertical (3H:1V) or shallower.
- f. Rip-rap slopes are prohibited.
- g. A minimum of three evergreen trees for screening shall be installed between the earthen structure and the north property. Trees shall be a minimum of 10 feet in height at time of planting.
- h. Temporary construction fencing shall be installed five feet from the north property line and no activity will take place within that five feet.
- i. No earthen fill greater than six feet above existing grade shall be allowed within 22 feet (the overall height of the earthen structure) of the northern property line.
- j. Construction plans shall be based upon an accurate survey of the project area and shall be submitted by an Engineer licensed in Nevada.
- k. All exterior lighting fixtures shall be shielded such that light is emitted downward only. No light shall be directed upward. No spill-over of light at any property line is permitted.

- I. The following **Operational Conditions** shall be required for the life of the project:
 1. This special use permit shall remain in effect until or unless it is revoked or is inactive for one year.
 2. Failure to comply with the Conditions of Approval shall render this approval null and void. Compliance with this condition shall be determined by the Planning and Development Division.
 3. The applicant and any successors shall direct any potential purchaser and/or the special use permit to meet with the Planning and Development Division to review Conditions of Approval prior to the final sale of the site and/or the special use permit. Any subsequent purchaser/operator of the site and/or the special use permit shall notify the Planning and Development Division of the name, address, telephone number, and contact person of the new purchaser/operator within 30 days of the final sale.

Washoe County Engineering and Capitol Projects Division

2. The following conditions are requirements of the Engineering and Capitol Projects Division, which shall be responsible for determining compliance with these conditions.

Contact Name: Leo Vesely, 775.328.2040, lvesely@washoecounty.us

- a. A complete set of construction improvement drawings, including an on-site grading plan, shall be submitted when applying for a building/grading permit. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading, site drainage, erosion control (including BMP locations and installation details), and slope stabilization. Placement or removal of any excavated materials shall be indicated on the grading plan. Silts shall be controlled on-site and not allowed onto adjacent property.
- b. Cross-sections indicating cuts and fills shall be submitted when applying for a grading permit. Estimated total volumes shall be indicated.

Washoe County Building and Safety Division

3. The following conditions are requirements of Building and Safety, which shall be responsible for determining compliance with these conditions.

Contact Name: Don Jeppson, 775.328.2030, djeppson@washoecounty.us

- a. Obtain necessary building or grading permits from Washoe County Building and Safety.

Washoe County Health District

4. The following conditions are requirements of the Health District, which shall be responsible for determining compliance with these conditions. The District Board of Health has jurisdiction over all public health matters in the Health District. Any conditions set by the Health District must be appealed to the District Board of Health.

Contact Name: Jim Shaffer, 775.328.6176, jshaffer@washoecounty.us

- a. The Vector-Borne Diseases Program shall require all voids in the armoring of the slope filled to a depth of 4 inches with mixed aggregate rock 3/4 inch to 1 1/2 inches in size (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.0865).

- b. Ponds and other man-made water impoundments shall be designed with graded bottoms and 3:1 slopes so that all water can be removed by gravity or pumping for maintenance purposes. The Vector-Borne Diseases Program supports the proposed composite edging for the pond however, if that option is not to be used, the Health District will require the perimeter of the pond lined with 4"-6" rock, one foot above and below the high water mark of the pond, to prevent vegetation growth along the edge of the pond which will mitigate insect development. (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.035).
- c. Prior to the sign off of the building plans the above detail designs are required on the plans and a scheduled compliance inspection with the Vector-Borne Diseases Program is required for the above condition(s).

Washoe/Storey Conservation District (WSCD)

- 5. The following conditions are requirements of the Washoe/Storey Conservation District, which shall be responsible for determining compliance with these conditions.

Contact Name: Kevin J. Roukey, 775-232-1571, kevinjr_51@att.net

- a. Provide exact amount of earth and boulders that will be imported. Provide exact amount of earthen material that will be hauled off site. The total amount of material being imported shall be broke down by type.
- b. Provide engineering drawings to clearly show all clearing and grubbing, pond excavation, and cross-sectional data
- c. All drawings must show the exact height of the proposed earthen structure, which shall not exceed 22 feet from existing grade.
- d. For the series of three check dams, of 2' to 4' in height, the applicant shall provide complete details of the design and how they are to be anchored in place.

*** End of Conditions ***



WASHOE COUNTY
COMMUNITY SERVICES DEPARTMENT

Engineering and Capital Projects Division

"Dedicated to Excellence in Public Service"

1001 East 9th Street PO Box 11130 Reno, Nevada 89520 Telephone: (775) 328-2040 Fax: (775) 328-3699

INTEROFFICE MEMORANDUM

DATE: December 31, 2015
TO: Roger Pelham, Planning and Development Division
FROM: Leo R. Vesely, P.E., Engineering and Capitol Projects Division
SUBJECT: **SB15-010**
APN 044-401-03
IREMONGER RESIDENCE WATER FEATURE

I have reviewed the referenced special use permit and have the following conditions:

1. A complete set of construction improvement drawings, including an on-site grading plan, shall be submitted when applying for a building/grading permit. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading, site drainage, erosion control (including BMP locations and installation details), and slope stabilization. Placement or removal of any excavated materials shall be indicated on the grading plan. Silts shall be controlled on-site and not allowed onto adjacent property.
2. Cross-sections indicating cuts and fills shall be submitted when applying for a grading permit. Estimated total volumes shall be indicated.

LRV/lrv

WASHOE COUNTY
HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

January 15, 2016

Roger Pelham MPA, Senior Planner
Washoe County Community Services
Planning and Development Division
PO Box 11130
Reno, NV 89520-0027

RE: Iremonger Residence Water Feature; APN: 044-401-03
Special Use Permit; SB15-010

Dear Mr. Pelham

The Washoe County Health District, Environmental Health Services Division (Division) Engineering and Vector have reviewed the above referenced project. Approval by this Division is subject to the following conditions:

1. The Vector-Borne Diseases Program shall require all voids in the armoring of the slope filled to a depth of 4 inches with mixed aggregate rock 3/4 inch to 1 1/2 inches in size (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.0865).
2. Ponds and other man-made water impoundments shall be designed with graded bottoms and 3:1 slopes so that all water can be removed by gravity or pumping for maintenance purposes. The Vector-Borne Diseases Program supports the proposed composite edging for the pond however, if that option is not to be used, the Health District will require the perimeter of the pond lined with 4"-6" rock, one foot above and below the high water mark of the pond, to prevent vegetation growth along the edge of the pond which will mitigate insect development. (Health Regulations Governing the Prevention of Vector-Borne Diseases 040.035).
3. Prior to the sign off of the building plans the above detail designs are required on the plans and a scheduled compliance inspection with the Vector-Borne Diseases Program is required for the above condition(s).

If you have any questions regarding the foregoing, please call Jim English at 328-2610 or Jim Shaffer 785-4599 regarding engineering or vector comments, respectively.

Sincerely,

James English
Environmental Health Specialists Supervisor
Environmental Health Services

J.L. Shaffer
Program Coordinator/Planner
Vector-Borne Diseases Program
Environmental Health Services

JE/JS/je

cc: File - Washoe County Health District



REGIONAL TRANSPORTATION COMMISSION

Metropolitan Planning • Public Transportation & Operations • Engineering & Construction

Metropolitan Planning Organization of Washoe County, Nevada

December 30, 2015

FR: Chrono/PL 183-15

Mr. Bill Whitney, Division Director
Community Services Department
Washoe County
P.O. Box 11130
Reno, NV 89520

**RE: AP15-007 (Incline Village Fine Art Festival)
SP15-010 (Iremonger Residence Water Feature)
SP15-012 (TMWA Mt. Rose Water Treatment Plant)
SP15-011 (Western Turf)**

Dear Mr. Whitney,

We have reviewed the above applications and have no comments at this time.

Thank you for the opportunity to comment on these applications. Please feel free to contact me at 332-0174 if you have any questions or comments.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca Kapuler". The signature is fluid and cursive, with the first name being the most prominent.

Rebecca Kapuler
Planner

RK/jm

Copies: Kelly Mullin, Washoe County Community Services
Eva Krause, Washoe County Community Services
Roger Pelham, Washoe County Community Services
Lora Robb, Washoe County Community Services
Debra Goodwin, Regional Transportation Commission
Marchon Miller, Regional Transportation Commission
Julie Masterpool, Regional Transportation Commission
Tina Wu, Regional Transportation Commission
David Jickling, Regional Transportation Commission

Washoe County no comment 122815

RTC Board: Neoma Jardon (Chair) • Ron Smith (Vice Chair) • Bob Lucey • Paul McKenzie • Vaughn Hartung
PO Box 30002, Reno, NV 89520 • 1105 Terminal Way, Reno, NV 89502 • 775-348-0400 • rtcwashoe.com



Roger Pelham, MPA, Senior Planner
 Kelly Mullin, Planner
 Eva M. Krause, AICP, Planner
 Lora R. Robb, Water Management Planner
 Washoe County Community Services Department
 Planning and Development Division
 1001 E. Ninth St., Bldg. A
 Reno, NV 89512

January 7, 2016

Subject: August Agency Review – Case Nos. – AP15-0017 (Incline Village Fine Art Festival); SB15-010 (Iremonger Residence); SB15-012 (TMWA Mt. Rose Water Treatment Plant); SB15-011 ()

Roger, et al,

Thank you for providing us the January Agency Review and the opportunity to review and provide comments. We have reviewed the subject proposed projects as requested and we have the following comments:

Natural Resource
 Conservation Service
 1365 Corporate Blvd.
 Reno, NV 89502
 Tel: (775) 857-8500
 ext. 131
 Fax: (775) 857-8525

Administrative Review Case Number AP15-007 (Incline Village Fine Art Festival)

The proposed project is to allow for the applicant to approve an Administrative Permit and outdoor community event business license for the Incline Village Fine Art Festival to be held at Preston Field located at 700 Tahoe Blvd. in Incline Village, Nevada. The proposed event will be held on August 13 and 14, 2016, between the hours of 10:00 a.m. and 5:00 p.m., with vendor set-up and tear-down taking place before 10:00 a.m. on Saturday, August 13, and after 5:00 p.m. on Sunday, August 14. This project is located outside of the Washoe/Storey Conservation District Service Area so we have no comment. However, the project is located within the boundaries of the Nevada Tahoe Conservation District service area. We recommend you provide them copies of the proposed project for their review. Their contact information is:

Board of Supervisors:
 Bret Tyler Chairman
 James Shaffer Secretary
 County Appointee
 Kevin Roukey Director
 Tory Friedman Supervisor
 Spencer Scott Supervisor
 John Muntin Supervisor
 OPEN
 City Appointee

Nevada Tahoe Conservation District
 P.O. Box 915
 Zephyr Cove, NV 89448
 Jason Brand, District Manager
 Tel. -775-586-1610 ext. 33

Special Use Permit Case Number SB15-010 (Barry Iremonger Residence Water Feature)

The proposed project is to approve Major Grading for construction of a permanent earthen structure greater than six feet in height on a residential parcel of land. The overall height is proposed to be 18 feet and will require the importation of approximately 900 cubic yards of earthen material. We have the following comments on this proposed project.

1. Regarding Supplemental Information items 2, and 4 - the cubic yards involved in excavation, importing or exporting seem to not be in sync. item 2 references 20 cubic yards excavated and item 4 indicates that 900 cubic yards of soil and granite boulders will be imported. The applicant needs to clarify if the 20 cubic yards total being excavated are being hauled off or they included in the 900 cubic yards being used to construct the feature. Also the total amount of material being imported should be broke down by category.

2. Supplemental Information item 7 – The applicant refers to the attached grading plan. The drawings provided do provide adequate information in regards to clearing

and grubbing, pond excavation and cross-sectional data. The applicant should be required to provide engineering drawings to satisfy this concern.

3. Supplemental Information item 11 – The applicant states that the berm is to be 18' high, yet the drawings submitted indicate that the top of the berm will be 22' above the existing grade of the lawn. This needs to be corrected.
4. Supplemental Information item 12 - The applicant states that there will be limited and will be constructed using field supervision by the team structural engineer. The drawings indicate a set of three check dams, of 2' to 4' in height, that provide the cascading effect of the stream. The applicant has not provided any details in their design or how they are to be anchored in place. This information needs to be provided.

Special Use Permit Case Number SB15-011 (Western Turf - Irrigation Pond)

The proposed project is to approve the grading of an area approximately 2.75 acres in size and excavation of approximately 10,600 cubic yards of earth to create a water storage pond for an agricultural irrigation system. The project is located at 0 Youngs Road, approximately ¼ mile north of its intersection with Sage Flat Road; and 1.4 miles east of Pyramid Highway. We have the following comments on this proposed project.

1. Supplemental Information items 15 - 17 - The applicant indicates in these items and on the drawings that they have a proposed seed mix. We request the County require the applicant to coordinate with the Washoe-Storey Conservation District and NRCS to review and approve the proposed seed mix.
2. General Comments:
 - a. The applicant has not provided any information regarding evapotranspiration loss or seepage. There is no soil report with regard to infiltration rate. Neither the application nor the drawings indicate that the pond will be lined. Lining the pond would minimize water loss.
 - b. The County should require the applicant to coordinate with the Washoe County Health Department, Vector Control, to ascertain if any treatment will be required.
 - c. On drawing C-2 the word Revegetation is misspelled as "Regegetation".

Special Use Permit Case Number SB15-012 (TMWA-Mt. Rose Water Treatment Plant)

The proposed project is to allow for the construction and operation of a water treatment plant on APN 150-460-05 including grading and construction of an access driveway in a Sensitive Stream Zone; and the construction of two creek diversions in the Critical Stream Zone, one in Thomas Creek (APN 152-430-18) and one in Whites Creek (APN 150-492-20). The water treatment plants and creek diversions will be used to enhance the ground water resources in the Mt Rose Fan area. The project is located near the Estates at Mt. Rose east of the Legends Subdivision, between Mt. Ranch Road and Whites Creek; Whites Creek between Callahan Road and Legends Subdivision; Thomas Creek between Crested Wheat Road and Melsarkey Way. We have the following comments on this proposed project.

1. Supplemental Information item 10 - The applicant indicates revegetation will consist of trees (evergreen and deciduous) and shrubs and revegetation proposed in accordance with the landscaping requirements based upon developed site area. We request the County require the applicant to coordinate with the Washoe-Storey Conservation District and NRCS to review and approve the proposed landscaping and seed mix to ensure that native species are utilized.
2. Engineering Plans Set – Grading Plan – Neither the application nor the grading plan contain any information regarding planning, installation and maintenance of Best Management Practices. We request require the applicant to provide this information for review and comments. This is a critical element due to the fact that the site is adjacent to a critical stream environment zone.
3. General Comments:
 - a. Diversion Structures – The applicant has not provided enough detailed information on the design, location and construction of the two diversion structures. WE request

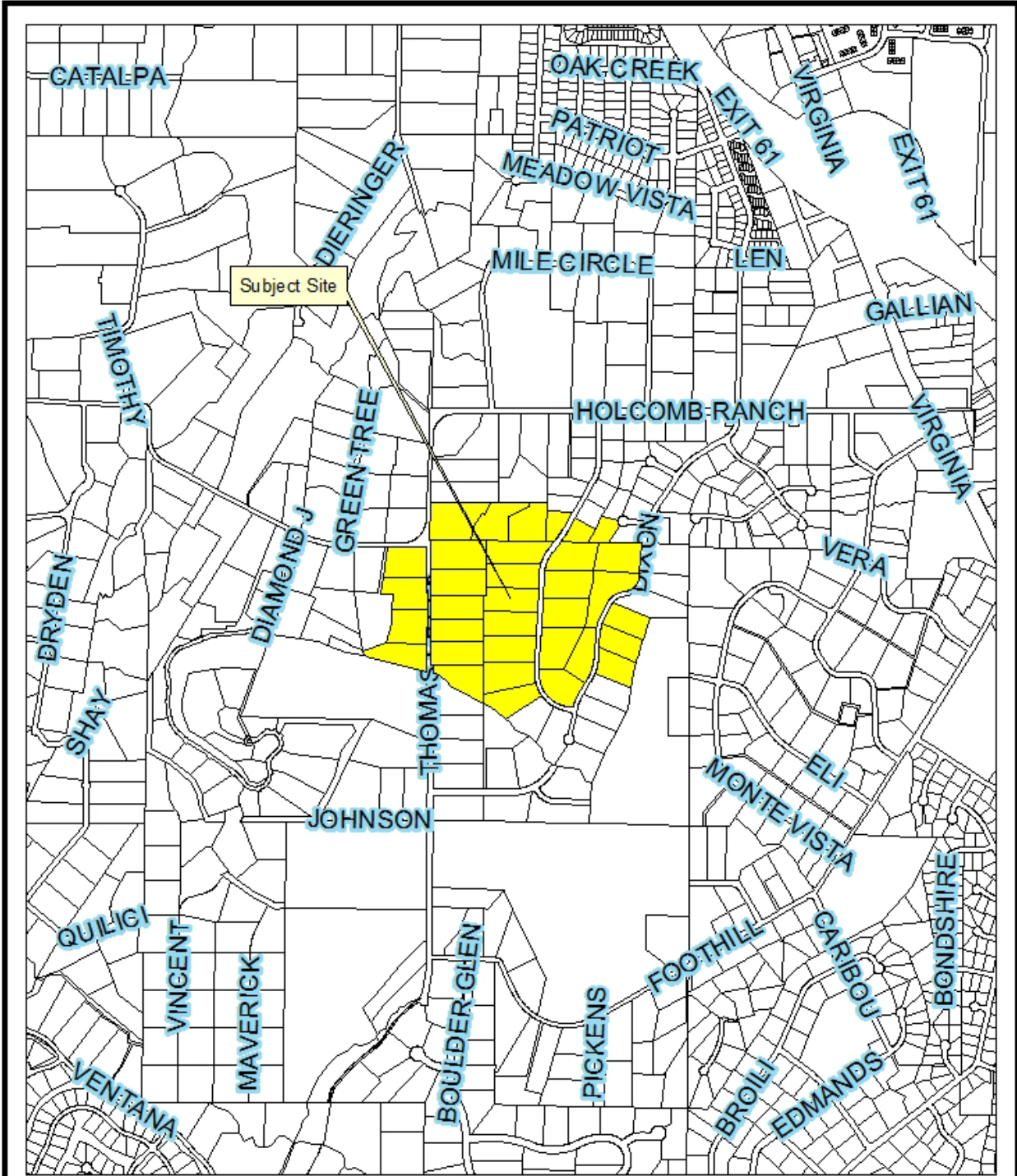
that the County require the applicant to provide this information prior to approval of the action.

- b. Corps of Engineers Approval – The applicant states that the two diversion structures will require approval from the Corps of Engineers. We request that the County require the applicant to provide the applications to the Corps of Engineers for the Washoe-Storey Conservation District to review and comment on.
- c. Cumulative Impacts – We are concerned that the increased diversion of upstream flows will have on the wetland mitigation sites that have been established for previous impacts to wetlands. Whites Creek and Thomas Creek are major contributors to the sustainability of these wetlands. Has the County addressed or required the applicant to assess what the downstream impacts will be to the mitigated wetlands sites in the South Truckee Meadows and Double Diamond area?

These are our comments and recommendations for the subject projects. We appreciate the opportunity to provide comments and recommendations on projects that may have impacts on our natural resources. Should you have any further questions please contact Kevin J. Roukey by phone at 775-232-1571 or email kevinjr_51@att.net.

Sincerely,

Kevin J. Roukey, District Coordinator
Washoe-Storey Conservation District



Mailing Label Map
 Special Use Permit Case No SB15-010
 Iremonger Major Grading
 34 Parcels selected at 700 feet.



Department of
 Community
 Development
 WASHOE COUNTY
 NE VADA
 Post Office Box 11120
 Reno, Nevada 89520
 (775) 335-3600

Source: Planning and Development

Date: December 2015

APPLICATION OVERVIEW

Dear Board of Adjustment member,

This Special Use Permit application for grading involves a decorative water feature in the rear yard of a residential home in the southwest area of the city, within Washoe County.

The specific section of the Development Code which requires your approval can be found on page 438-9, Item 4, addressing "earthen structures". The code requires approval of all rear yard structures exceeding 6' in height.

The owner wishes to create a naturalistic waterfall feature approximately 18' in height at its highest point. We have attached conceptual sections for your review. Given the size of the property (2.53 acres) and the significant distance from the feature to adjacent properties, as well as the thoughtful design, this attractive water feature will be very much in scale with its surroundings. Please note that the closest adjacent home is over 125' away and is screened by mature evergreen and deciduous trees.

The fountain will be created using weathered Sierra granite, native and ornamental shrub planting and rock mulches to protect against any slope erosion. Our highly experienced team of Landscape Architects, Arborists, Horticulturalists, Civil and Structural Engineers will insure that a handsome and environmentally responsible amenity will be created.

Regarding water loss through evaporation, we estimate a loss of 45 gallons/day during peak summer (or 1350 gal./month. For comparison purposes, a 1000 s.f. irrigated lawn will lose approx.. 4421 gal./month, more than 3 times the amount lost with this water feature.

Within the feature, there will be a short “walk-thru grotto” which will allow the owner and visitors the ability to pass behind the curtain of falling water. This section is expected to be only 6’-7’ in length, but will provide a unique landscape experience. From a structural standpoint, the short pass-thru section will be solidly stabilized using boulder-specific structural calculations with field inspected boulder placement/direction from the structural engineer, K2 Engineering.

The owner and the design team look forward to a successful and attractive landscape amenity and we thank you for your consideration.

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Development staff at 775.328.3600.

Project Information		Staff Assigned Case No.: _____	
Project Name: Iremonger Residence Water Feature			
Project Description: A natural granite water feature consisting of approx. 900 cyds of imported rock ± soil. Height not to exceed 18' above grade. Dense planting and rip-rap will stabilize fountain from erosion.			
Project Address: 9695 Passa Tempo Drive, Reno NV			
Project Area (acres or square feet): 9372 s.f. or .21 acre			
Project Location (with point of reference to major cross streets AND area locator): The residence is located to the S.E. of the intersection of Holcomb Ranch Lane and Thomas Creek Road. See vicinity map of grading plan.			
Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
044-401-03	2.53 ±.		
Section(s)/Township/Range: T 18 R 20 S 07			
Indicate any previous Washoe County approvals associated with this application: Case No.(s). none			
Applicant Information (attach additional sheets if necessary)			
Property Owner:		Professional Consultant:	
Name: Barry Iremonger		Name: Gail Wilkey Landscaping inc	
Address: 9695 Passa Tempo Drive Reno NV Zip: 89511		Address: 9825 S. Virginia Street Reno NV Zip: 89511	
Phone: (775) 247-2851 Fax: n/a		Phone: (775) 853-8733 Fax: 853-3652	
Email: Barry.Iremonger@scientificjames.com		Email:	
Cell: see above Other:		Cell: Other:	
Contact Person: Barry Iremonger		Contact Person:	
Applicant/Developer:		Other Persons to be Contacted:	
Name:		Name: K2 Engineering	
Address:		Address: 3100 Mill Street # 107 Reno NV Zip: 89502	
Zip:		Phone: (775) 355-0505 Fax: 355-0566	
Phone:		Email: k2eng.net	
Fax:		Cell: Other:	
Email:		Contact Person: Brandt Kennedy	
Cell: Other:			
Contact Person:			
For Office Use Only			
Date Received:	Initial:	Planning Area:	
County Commission District:		Master Plan Designation(s):	
CAB(s):		Regulatory Zoning(s):	

Property Owner Affidavit

Applicant Name: Mr. Barry Iremonger

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
COUNTY OF WASHOE)

I, Barry Iremonger
(Please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Development.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 044 - 401 - 03

Printed Name Barry Iremonger

Signed [Signature]

Address 9695 Passa Tempo Drive
Reno NV 89511

Subscribed and sworn to before me this 18th day of December, 2015.

[Signature]
Notary Public in and for said county and state

My commission expires: 12/1/2018

(Notary Stamp)



*Owner refers to the following: (Please mark appropriate box.)

- Owner
- Corporate Officer/Partner (Provide copy of recorded document indicating authority to sign.)
- Power of Attorney (Provide copy of Power of Attorney.)
- Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- Property Agent (Provide copy of record document indicating authority to sign.)
- Letter from Government Agency with Stewardship



NEVADA STATE CONTRACTORS BOARD

9670 GATEWAY DRIVE, SUITE 100, RENO, NEVADA, 89521 (775) 688-1141 FAX (775) 688-1271, INVESTIGATIONS (775) 688-1150
2310 CORPORATE CIRCLE, SUITE 200, HENDERSON, NEVADA, 89074 (702) 486-1100 FAX (702) 486-1190, INVESTIGATIONS (702) 486-1110
www.nscb.state.nv.us

NRS 624.031 Applicability of chapter: Exemptions. The provisions of this chapter do not apply to:

4. An owner of property who is **building or improving a residential structure on the property for his own occupancy and not intended for sale or lease**. The sale or lease, or the offering for sale or lease, of the newly built structure within 1 year after its completion creates a rebuttable presumption for the purposes of this section that the building of the structure was performed with the intent to sell or lease that structure. An owner of property who requests an exemption pursuant to this subsection must apply to the board for the exemption. The board shall adopt regulations setting forth the requirements for granting the exemption.

If you are seeking an exemption from licensure pursuant to NRS 624.031(4) you must complete the following affidavit, obtain the required signatures, and submit the original to the building department with your application for a building permit.

OWNER BUILDER AFFIDAVIT OF EXEMPTION

I hereby certify that I am the owner of the property listed below, and that I am building or improving a residential structure on this property for my own occupancy and do not intend to sell or lease the property.

Parcel Number: 044-401-03 Description of Work: Residential water feature Type of Permit grading

I further acknowledge and **initial** the following obligations and duties:

RS I may not sell or lease this property. If I sell or lease, or offer to sell or lease this property within 1 year after completion, it may be presumed that I have violated the provisions of this exemption and Chapter 624 of NRS.

RS **I MAY NOT HIRE AN UNLICENSED PERSON TO ACT AS MY CONTRACTOR, AGENT, OR CONSTRUCTION MANAGER.**

RS I must directly supervise the construction.

RS Any subcontractor(s) working on this project must be properly licensed by the Nevada State Contractors Board.

RS **Any person working on my project who is not a licensed contractor must work under my direct supervision and must be employed by me. I must comply with all State and Federal laws as an employer in the State of Nevada, including payroll deductions (FICA and income tax withholding), provide industrial insurance coverage, and pay the required unemployment compensation for that employee.**

RS If my project requires the repair, restoration, improvement or construction of a pool or spa, I acknowledge my obligation and duty to comply with the provisions of NRS 624.900 through NRS 624.930 (inclusive).

RS Identify your consultant or construction manager. Coail Willey Landscaping inc.

RS I acknowledge that I have received copies of NRS 624.900 through NRS 624.930 (inclusive) and NRS 278.573.

I have read the above owner builder affidavit of exemption and certify that the information provided is true and correct to the best of my knowledge. I certify under penalty of perjury to the truth and accuracy of all statements contained herein.

Dated this 08 day of Dec. 2015

[Signature]
Legal Owner of Residential Property (Signature)

Barry Irrminger
(Print Name)

9695 Passa Tempo Drive
Location of Single Family Residence

Reno NV 89511
City State Zip

Telephone #: 775-233-7576

Special Use Permit Application for Grading Supplemental Information

(All required information may be separately attached)

Chapter 110 of the Washoe County Code is commonly known as the Development Code. Specific references to special use permits may be found in Article 810, Special Use Permits. Article 438, Grading, and Article 418, Significant Hydrologic Resources, are the ordinances specifically involved in this request.

1. What is the purpose of the grading?

Construction of a residential, ornamental water feature requiring importing rock & soil to create a large, berm or "earthen structure". Please see the attached grading plan and sections.

2. How many cubic yards of material are you proposing to excavate on site?

20 yds. for pond at the lowest point

3. How many square feet of surface of the property are you disturbing?

9300 sf. or .21 acre

4. How many cubic yards of material are you exporting or importing? If none, how are you managing to balance the work on-site?

900 yds. of soil and granite boulders

5. Is it possible to develop your property without surpassing the grading thresholds requiring a Special Use Permit? (Explain fully your answer.)

No. In order to construct the water feature at the designed height and length, the needed volume of import will surpass the grading thresholds.

6. Has any portion of the grading shown on the plan been done previously? (If yes, explain the circumstances and the year the work was done.)

No.

7. Have you shown all areas on your site plan that are proposed to be disturbed by grading? (If no, explain fully your answer.)

Yes. Please see the attached grading plan prepared by project engineer.

8. Can the disturbed area be seen from off-site? If yes, from which directions, and which properties or roadways?

Very limited views from the two adjacent properties due to the distances involved (120' to nearest home) and the existence of mature evergreen and deciduous trees. In addition, the proposed tree planting would further screen the decorative feature. The water feature would not be visible from any roadway.

9. Could neighboring properties also be served by the proposed access/grading requested (i.e. if you are creating a driveway, would it be used for access to additional neighboring properties)?

There is no driveway proposed. not applicable.

10. What is the slope (Horizontal:Vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

The steepest fill slope on the backside of the water feature would be a very small area of 2:1 slope (1100 s.f.) All disturbed areas will be protected with fractured rock rip-rap (3"-8"), weed fabric below, and fully re-vegetated with native and ornamental shrubs. All plant material within the project will be drip irrigated with a fully automatic system.

11. Are you planning any berms?

Yes No If yes, how tall is the berm at its highest? 18' at highest point

12. If your property slopes and you are leveling a pad for a building, are retaining walls going to be required? If so, how high will the walls be and what is their construction (i.e. rockery, concrete, timber, manufactured block)?

no retaining walls for buildings or pad construction. The proposed water feature will be located 2% site, approx. 75' from the existing home. Within the water feature, limited retaining conditions will be constructed using field supervision by the team structural engineer. Please see the attached grading plan and sections provided.

13. What are you proposing for visual mitigation of the work?

A dense stand of evergreen and deciduous trees will serve as the primary visual mitigation, in addition to the existing mature trees. Also see question # 8 for additional information.

14. Will the grading proposed require removal of any trees? If so, what species, how many and of what size?

none.

15. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

no hydroseeding is planned. All plant material shall be 5 gallon shrubs, drip irrigated.

16. How are you providing temporary irrigation to the disturbed area?

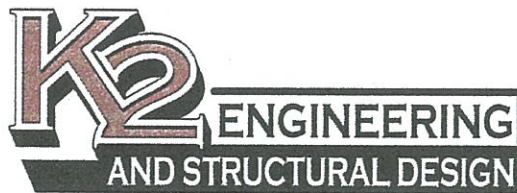
see question # 15 (above).

17. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

The plans will be submitted to WSCD by the County. Any comments/suggestions will be addressed by the consultant upon receiving them.

18. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that may prohibit the requested grading?

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	If yes, please attach a copy.
------------------------------	--	-------------------------------



December 10, 2015

Washoe County
Building Department
1001 E. Ninth Street
Reno, Nevada 89512
(775) 328-2020

RE: 9695 Passa Tempo Drive, Landscape Rockery Wall
Iremonger Residence

To whom it may concern,

This letter is to certify that the attached rockery wall design has been reviewed and is acceptable. Please see the attached verifying calculations and drawings.

Thank you for your review of this project and please feel free to call with any questions.

Regards,



DEC 14 2015

Brandt T. Kennedy, PE
Jared A. Krupa, PE

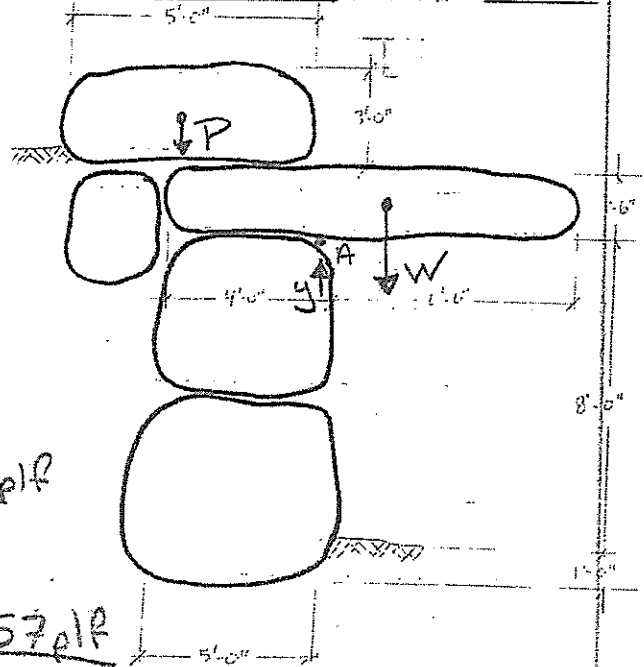


ASSUMPTIONS:

$\gamma_{rock} = 175 \text{ pcf}$

$q = 2000 \text{ psf}$

$f'_{Rock} = 2500 \text{ psi}$



$W = (1.5' \times 10') \times 175 \text{ pcf} = 2625 \text{ plf}$

$\rightarrow \Sigma M_A \Rightarrow W \times 1' = P \times 4'$

$P = 2625 \times 1' \div 4' = 657 \text{ plf}$

CHECK TOP ROCK:

$(3' \times 5') \times 175 \text{ pcf} = 2625 \text{ plf} > 657 \text{ plf} - \text{OK}$

$\rightarrow \Sigma F_y \Rightarrow 2625 \text{ plf} - 657 \text{ plf} = y = 1968 \text{ plf}$

CHECK SHEAR:

$V_{rock} = 2 \sqrt{f'_{Rock}} b \cdot d \Rightarrow 2 \sqrt{2500} \cdot 12' \cdot 18'' = 21,600 \text{ plf}$

$> 1968 \text{ OK}$

\rightarrow CHECK SOIL BEARING:

$\text{TOTAL WEIGHT} = ((4.5' \times 8') + (1.5' \times 10') + (2' \times 3')) \cdot 175 \text{ pcf}$

$= 9975 \text{ plf} \div 5' = 1995 \text{ psf} < 2000 \text{ OK}$

CASAZZA RANCH ESTATES PHASE 4

GEOTECHNICAL INVESTIGATION
CASAZZA RANCH ESTATES
- PHASE 4

Washoe County, Nevada

March, 1992

prepared for:

CASAZZA RANCH ESTATES

Reno/Sparks, Nevada
Las Vegas, Nevada
Phoenix, Arizona





Consulting Engineers

950 INDUSTRIAL WAY
SPARKS, NEVADA 89431-6092
(702) 358-6931
FAX: 358-6954

March 25, 1992
Project No. 2260-01-1

Mr. Don Casazza
Casazza Ranch Estates
1100 West Holcomb Lane
Reno, Nevada 89511

Dear Mr. Casazza:

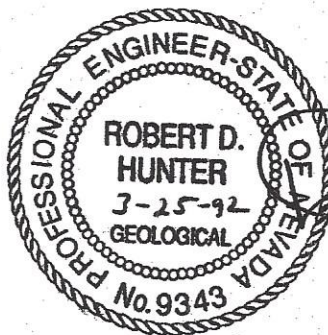
We are pleased to present the results of our geotechnical investigation for the proposed Phase 4 of the Casazza Ranch Estates in Washoe County, Nevada.

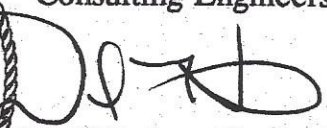
Based on our site exploration the soils within the proposed subdivision appear to be predominately granular. Such soils will provide good foundation support and may be used as structural fill. Groundwater was encountered in the southeastern portion of the site approximately 100 feet west of an active irrigation ditch. We anticipate that a significant rise in the water table will occur during the irrigation season such that a permanent dewatering system must be considered.

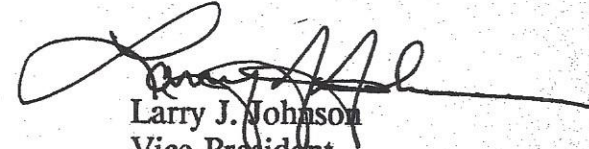
The following report presents our geotechnical recommendations for design and construction of the proposed project. We wish to thank you for the opportunity to conduct this investigation and we will be readily available to discuss any related questions.

Sincerely,

SEA, Incorporated
Consulting Engineers




Dal Hunter, Ph. D., P.E.
Geological Engineer
R.E. No. 9343


Larry J. Johnson
Vice President

RICHARD W. ARDEN, P.E.
President

RONALD D. BYRD, P.E.
Executive Vice President

JOE W. HOWARD, P.E.
Senior Vice President

HARRY R. ERICSON, P.L.S.
Senior Vice President

LARRY J. JOHNSON
Vice President

LJJ:DH:ds
Enclosure

Reno/Sparks
Las Vegas
Phoenix

SB15-010
EXHIBIT D

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
PROJECT DESCRIPTION	1
SITE CONDITIONS	2
EXPLORATION	2
LABORATORY TESTING	3
GEOLOGIC AND GENERAL SOIL CONDITIONS	3
GEOLOGIC HAZARDS	4
DISCUSSION AND RECOMMENDATIONS	7
General Information	7
Ditch Seepage	8
Site Preparation	8
Trenching and Excavation	10
Grading and Filling	11
Shrinkage and Subsidence	13
Foundation Design	13
Slope Stability and Erosion Control	14
Pond	14
Site Drainage	15
Subsurface	15
Surface	15
Asphaltic Concrete	16
ANTICIPATED CONSTRUCTION PROBLEMS	17
QUALITY CONTROL	17
STANDARD LIMITATION CLAUSE	18
REFERENCES	20

TABLE OF CONTENTS (continued)

TABLES

- Table 1 - Minimum Strength Properties for Geofabric
- Table 2 - Guideline Specifications for Stabilizing Fill Over Geofabric
- Table 3 - Maximum Allowable Temporary Slopes
- Table 4 - Guideline Specification for Imported Structural Fill
- Table 5 - Traffic Analysis for Residential Streets
- Table 6 - Recommended Minimum Structural Sections

PLATES

- 1 - Plot Plan
- 2 - Test Pit Logs
- 3 - Graphic Soils Classification Chart
- 4 - Test Results



GEOTECHNICAL INVESTIGATION
PHASE 4, CASAZZA RANCH ESTATES
WASHOE COUNTY, NEVADA

INTRODUCTION

Presented herein are the results of our geotechnical investigation for the proposed Phase 4 of the Casazza Ranch Estates in Washoe County, Nevada. The project is entirely contained in Section 7, Township 18 North, Range 20 East, M.D.M. The objectives of this study were to:

1. Determine general soil and groundwater conditions pertaining to design and construction of the proposed subdivision.
2. Provide recommendations for design and construction of the project, as related to these geotechnical conditions.

The area covered by this investigation is shown on Plate 1 - Plot Plan. The investigation included field exploration, laboratory testing, and engineering analysis to determine the physical and mechanical properties of the various on-site materials. Results of our field exploration and testing programs are included in this report and form the basis for all conclusions and recommendations.

PROJECT DESCRIPTION

The proposed development is to consist of a 7 lot custom home residential subdivision. This will be Phase 4 of the Casazza Ranch Estates, with phases 1-3 already completed. Each lot within Phase 4 will be a minimum of 2.5 acres in size. Grading will be individually for each lot. Water, gas, and electricity will be provided by Sierra Pacific Power Company.

Sewage disposal will be provided by the City of Reno/Washoe County. The only access road, Passa Tempo Drive, will be dedicated to Washoe County and will include concrete curb and gutter on both sides. A temporary turn-around will be constructed on the south terminus of Passa Tempo Drive until such time as the road is extended for future phases. Irrigation drain ditches will be provided around the east, west, and northern parcel boundaries to intercept irrigation waters from surrounding pastures. All seven lots will include water rights and access to irrigation waters through a new system of ditches and drains. Some irrigation water will be stored in an existing and proposed pond along the east property line.

SITE CONDITIONS

The site consists of an irregularly shaped parcel of approximately 11.0 acres located in Washoe County, Nevada. Access is available from Holcomb Lane by way of the existing Passa Tempo Drive which presently dead ends at the northern boundary of Phase 4. The parcel is bordered to the north and partially to the east by Phase 1 & 3 of Casazza Ranch Estates. Property to the west, south and most of the east is undeveloped pasture land. Several active irrigation ditches are present across the site. The topography slopes at an average of 2 to 3 percent to the northeast. Vegetation consists of a thick mat of pasture grass. A barbed wire fence surrounds the property and a corral & loading chute is present in the northeast corner. Although the site itself was not being irrigated, the ditch just east of the eastern property boundary was active.

EXPLORATION

Phase 4 was explored in March, 1992 by excavation of 4 test pits. Locations of the test pits are shown on Plate 1. The maximum depth of exploration was 11 feet below the existing ground surface. Bulk samples for index testing were collected from the trench wall sides at specific depths in each soil horizon.

A geologist examined and classified all soils in the field. Logs of the test pits are presented as Plate 2 and a graphic soils classification chart has been included as Plate 3. Representative samples were returned to our Sparks laboratory for testing. Ground water levels were measured where encountered.

LABORATORY TESTING

Samples of each significant soil type were analyzed in SEA's materials testing laboratory to determine their grain size distribution and plasticity (Plate 4). Results of these tests were used to classify the soils according to the Unified Soils Classification System (Plate 3) and to verify the field logs. Classification in this manner is an indication of the soil's strength and mechanical properties. When the soils are clearly granular, as was the case here, and structural loads are light, these index properties can be correlated with published tables (NAVFAC, 1982, PCA, 1988) to obtain a satisfactory and conservative estimate for the angle of internal friction, unit weight and R-value. The angle of internal friction and unit weight are used for calculation of bearing capacity, lateral earth pressures and the coefficient of sliding friction. R-values are a measure of subgrade strength and used for design of asphalt and concrete pavements. For small residential subdivisions, traffic loading is so light that pavement design is almost independent of R-value, as long as the soil is not expansive.

The results of our testing program are summarized in Plate 4. All tests were conducted in accordance with ASTM Standards.

GEOLOGIC AND GENERAL SOIL CONDITIONS

The site lies on a broad alluvial fan derived from erosion of the Carson Range to the west. This unit includes low gradient stream deposits as well as older, reworked glacial outwash and alluvial fan deposits. This material is generally coarsely granular with surficial

sheet-like layers of clayey sand. Soils observed in our test pits ranged from near-surface clayey sand and silty sands to coarse, sandy gravels. Typically, the surface consist of approximately one foot of slightly plastic with 15 to 20 percent fines, 75 to 80 percent very fine to coarse sand and 5 percent gravel. This unit is underlain by a similar sand or by a low plastic clayey sand. The clayey sand contains 20 to 30 percent fines, 65 to 75 percent very fine to coarse sand and 5 percent gravel. Occasionally this unit is found directly at the surface, however, it was never observed in a thickness greater than 1.5 feet. Underlying gravels typically consist of 5 percent fines, 45 percent very fine to coarse sand and 50 percent rounded gravels to a 3-inch diameter with cobbles to a 10-inch diameter comprising 5 to 15 percent of the total mass.

Groundwater was encountered only in test pit No. 3 at a depth of 7.2 feet below the ground surface. This test pit was approximately 100 feet west of an active irrigation ditch and closer to the ditch than the other three test pits.

GEOLOGIC HAZARDS

Much of the Western United States is a region of moderate to intense seismicity related to movement of the crustal masses (plate tectonics). By far, the most active regions, outside of Alaska, center around the San Andreas fault system of western California. Other seismically active areas include the Wasatch Front in Salt Lake City, Utah, which forms the eastern boundary of the Basin and Range physiographic province, and the eastern front of the Sierra Nevada Mountains, which is the western margin of the province. The Reno-Sparks area lies along the eastern base of the Sierra Nevada, within the western extreme of the Basin and Range. It must be recognized that there are probably few regions in the United States not underlain at some depth by older bedrock faults. Even areas within the interior of North America have a history of strong seismic activity.

The Truckee Meadows lies within Seismic Zone 3, an area with a potential for earthquake damage. Seismicity within the Reno-Sparks area is considered about average

for the western Basin and Range Province (Ryall and Douglas, 1976). It is generally accepted that the maximum credible earthquake in this area would be in the range of magnitude 7 to 7.5 and produced along the frontal fault system of the Eastern Sierra Nevada. The most active segment of this fault system in the Reno area is located at the base of the mountains near Thomas Creek, Whites Creek, and Mt. Rose Highway, about 2.5 miles southwest of the project. It has been estimated (Ryall and Douglas, 1976) that an earthquake of magnitude 7 or greater will occur within a return period of about 75 years within a 60 mile radius of Reno. Within a radius of 20 miles, a magnitude 5.3 earthquake will have a return period around 30 years. Although we know that earthquakes will occur in this region, it is impossible to predict which fault will rupture next. In addition, it is impossible to predict the magnitude of any such earthquake.

No faults were observed on the site either at the surface or in the test pits. The published geologic hazards map (Szecsody, 1983) shows several faults within a one mile radius of the site, though none cross Phase 4 or are within 2,000 feet of the boundaries. The criteria for evaluation of earthquake faults are not currently regulated by Washoe County or the State of Nevada. As a consequence, most geological consultants in Nevada rely on methods and criteria established by the State of California. In California, the Alquist-Priolo Act of 1972 defined active faults as those with evidence of displacement within the past 11,000 (Holocene time). Those faults with evidence of displacement during Pleistocene time (11,000 to 2,000,000 years before present) are generally considered potentially active. Based on the geologic hazards map, the faults in the vicinity of the project are considered potentially active. Potentially active is a rather alarming and unfortunate term in that it suggests a higher degree of risk than is justified, in most cases. Recurrence intervals for Nevada earthquakes along faults that have been studied are estimated to be in the range of 6,000 to 18,000 years in western Nevada, (Bell, 1984). The very active eastern boundary faults of the Sierra Nevada mountains may have a shorter recurrence interval of 1000 to 2000 years.

The Geologic Hazards Map (Szecsody, 1983) shows the area as having the "*Greatest severity of shaking. Depth to groundwater less than 10 feet. Unconsolidated deposits with low*

rigidity. Possible severe liquefaction locally," Materials observed in our test pits were often weakly cemented and very coarse. Based on our limited observations, shallow liquefaction would seem unlikely due to the coarse granular nature of the native soils, however, liquefaction could occur at greater depths or in localized areas if loose clean sands are present.

Detailed analysis of liquefaction requires rotary borings to depths of 40 feet, standard penetration testing on maximum 5 foot centers, and index testing of subsurface soils. In Nevada, there is no specific policy which requires structures to be designed to resist liquefaction. Such designs tend to be very costly, and are usually limited to those structures with a public safety function such as fire and police facilities and hospitals or buildings with high occupancy such as large commercial, retail, office and manufacturing facilities, schools, municipal, or major governmental buildings. These types of structures present a significant potential for loss of life and/or are important enough, from a public safety standpoint, such that a design to minimize liquefaction may be warranted. The decision to mitigate or accept liquefaction risk is a business decision that can only be made by the owner/developer. The decision requires analysis of up-front mitigation costs as compared to the potential for longer range repair costs and liability.

The site lies below the 100-year flood elevation and should be designed accordingly. The Federal Emergency Management Agency map 320019 - 1463C (April 16, 1990) shows the site as lying within Flood Zone AO. Flood Zone AO consists of *"Areas of 100-year shallow flooding with depths between 1 and 3 feet; No flood hazard features are determined."* In this area the water depth is shown as 1 foot with a velocity of 4 feet per second.

A moderate potential for dust generation is present if grading is performed in dry weather. No other geologic hazards were identified.

DISCUSSION AND RECOMMENDATIONS

General Information

The site lies in an area of generally granular soils with no significant foundation problems. A thin unit of clayey sand was observed in three of the test pits. The material tested would not be significantly expansive if properly moisture conditioned and compacted during site preparation. Shallow groundwater was encountered in the southeastern corner of the parcel. Shallow groundwater may occur throughout the site during the irrigation season.

The recommendations provided herein, and particularly under **Site Preparation, Grading and Filling, Foundation Design, Site Drainage and Quality Control** are intended to minimize risks of structural distress related to consolidation or expansion of native soils and/or structural fills. These recommendations, along with proper design and construction of the structure and associated improvements, work together as a system to improve overall performance. If any aspect of this system is ignored or poorly implemented, the performance of the project will suffer.

All structures should be designed for seismic zone 3. Structural areas referred to in this report include all areas of buildings, concrete slabs, asphalt pavements, as well as pads for any minor structures. All compaction requirements presented in this report are relative to ASTM D1557-78. For the purposes of this project fine grained soils are defined as those with more than 40 percent by weight passing the number 200 sieve. Clay soils are defined as those with more than 30 percent passing the number 200 sieve and a plastic index greater than 15. Granular soils are those not defined by the above criteria. Sufficient quality control should be performed to verify that the recommendations presented in this report are followed.

Any evaluation of the site for the presence of surface or subsurface hazardous substances is beyond the scope of this investigation. When suspected hazardous substances

are encountered during routine geotechnical investigations they are noted in the exploration logs and immediately reported to the client. No such substances were revealed during our exploration.

The test pits were excavated by backhoe at the approximate locations shown on the site plan. Locations were determined in the field by approximate means. All test pits were backfilled upon completion of the field portion of our study. The backfill was compacted to the extent possible with the equipment on hand. However, the backfill was not compacted to the requirements presented herein under **Grading and Filling**. If structures, concrete flatwork, pavement, utilities or other improvements are to be located in the vicinity of any of the test pits, the backfill should be removed and recompactd in accordance with the requirements contained in the soils report. Failure to properly compact backfill could result in excessive settlement of improvements located over test pits.

Ditch Seepage

The parcel is in an area of active irrigation and several irrigation ditches will border and cross the Phase 4 development. Since irrigation was very limited at the time of exploration, it was not possible to evaluate the presence of, or potential, for ditch seepage and consequent saturation of crawl space areas. Based on the coarse granular nature of the soils present in the area of the ditch, crawl space flooding from ditch seepage should not be a problem. Final evaluation will require a grading plan and additional test pits several months after irrigation has been halted.

Site Preparation

All vegetation should be stripped and grubbed from the surface and removed from the site. A stripping depth of 0.3 feet is anticipated. All areas to receive structural fill or structural loading should be densified to at least 90 percent relative compaction. If soils are too coarse to allow standard density tests, a proof rolling of a minimum 5 single passes with a minimum 10 ton roller in mass grading, or 5 complete passes with hand compactors in

footing trenches is recommended. In all cases the final surface should be smooth, firm and exhibit no signs of deflection. This alternate has proved to provide adequate project performance as long as all other geotechnical recommendations are closely followed.

Existing ditches which are to be abandoned and are located in structural areas, will require overexcavation to remove organic material and soft, wet, fine grained soils. The overexcavation should extend to a depth of at least 1 to 3 feet below the ditch bottom unless granular soils are encountered at shallower depth. The width of overexcavation will be dependent upon the extent of soft wet soils that cannot be compacted. Ditch bottoms may require stabilization in accordance with later recommendations. Where irrigation ditches are to be perpetuated it will be necessary to either reroute them around structural areas or replace the ditches with gasketed pipes. Piped ditches should underlie only nonstructural lot areas.

If construction is anticipated during or near the irrigation season, stabilization of native soils will likely be necessary. Stabilization may be achieved by placement of an initial 12 to 18 inch thick lift of 12-inch minus rock fill. This fill should be densified with large equipment, such as a self propelled sheeps-foot or a large loader, until no further deflection is noted. Additional lifts of rock may be necessary to achieve adequate stability.

As an alternate, a geofabric may be used for stabilization. The geofabric should meet or exceed the following minimum properties:

TABLE 1 - Minimum Strength Properties for Geofabric

Grab Strength (ASTM D1682)	180 lbs.
Puncture Strength (ASTM D3787-86)	75 lbs.
Burst Strength (ASTM 3786-80)	290 psi.

A minimum of 18 inches of imported coarse structural fill should be placed above the geofabric. Additional lifts of stabilizing fill may be necessary. The stabilizing fill should meet the following guideline specifications:

TABLE 2 - Guideline Specifications for Stabilizing Fill Over Geofabric

<u>Sieve Size</u>	<u>Percent by Weight Passing</u>
3 Inch	100
3/4 Inch	50 - 100
No. 4	30 - 70
No. 200	0 - 8

Trenching and Excavation

Temporary trenches with near vertical side walls should be stable to a depth of approximately 5 feet. Excavations to greater depths will require shoring or laying back of sidewalls to maintain adequate stability. Regulations amended in Part 1926, Volume 54, Number 209 of the Federal Register (Table B-1, October 31, 1989) require that the temporary sidewall slopes be no greater than those presented in Table 3.

TABLE 3 - Maximum Allowable Temporary Slopes

<u>Soil or Rock Type</u>	<u>Maximum Allowable Slopes¹ For Deep Excavations Less Than 20 Feet Deep²</u>
Stable Rock	Vertical (90 degrees)
Type A ³	3H:4V (53 degrees)
Type B	1H:1V (45 degrees)
Type C	3H:2V (34 degrees)

NOTES:

1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
2. Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.
3. A short-term (open 24 hours or less) maximum allowable slope of 1H:2V (63 degrees) is allowed in excavations in Type A soil that are 12 feet or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet in depth shall be 3H:4V (53 degrees).

These Regulations, including the classification system and the maximum slopes, have been adopted and are strictly enforced by the State of Nevada, Department of Industrial Relations, Division of Occupational Safety and Health. In general, Type A soils are cohesive, non-fissured soils with an unconfined compression strength of 1.5 tons per square foot (tsf) or greater. Type B are cohesive soils with an unconfined compressive strength between 0.5 and 1.5 tsf. While those designated as Type C have an unconfined compressive strength below 0.5 tsf. Numerous additional factors and exclusions are included in the

formal definitions. The client, owner, design engineer and contractor shall refer to Appendix A and B of Subpart P of the previously referenced Federal Register for complete definitions and requirements on sloping and benching of trench sidewalls. Appendices C through F of Subpart P apply to requirements and methodologies for shoring.

On the basis of our exploration, the Phase 4 soils are predominately Type B. Any area in question should be considered Type A unless specifically examined by the geological engineer during construction. All trenching should be performed and stabilized in accordance with local, state and OSHA standards.

Trench backfill should include no particles larger than 4 inches in maximum dimension. In general, bedding and initial backfill 12 inches over the pipe will require import, but native granular soil will provide adequate final backfill as long as oversized particles are excluded. Bedding and initial backfill should conform to the requirements of the utility having jurisdiction. Excavations below the groundwater table will likely require dewatering. Below the waterline bedding and backfill should consist of drainrock graded in accordance with the requirements for Class C drain backfill presented in the County of Washoe Standard Specifications for Public Works Construction. Above the waterline, trenches should be backfilled in maximum 8-inch thick loose lifts in all structural areas. Each lift should be densified to a minimum of 90 percent relative compaction (ASTM D1557-78) except in structural building pad areas where minimum densifications should be to 95 percent relative compaction.

Grading and Filling

Native clay soils, if encountered and as defined previously under **General Information** should be placed only in non structural fills. Native granular soils will be suitable for structural fill provided particles larger than 4 inches are removed. Oversized rock can be stockpiled for later use as erosion protection or placed in the bottom of deep fills. In deep fills oversized rocks must be scattered in such a manner as to preclude development of voids

between the particles (nesting). Imported structural fill should meet the specifications of Table 4.

TABLE 4 - Guideline Specification for Imported Structural Fill

<u>Sieve Size</u>	<u>Percent by Weight Passing</u>	
4 Inch	100	
3/4 Inch	70 - 100	
No. 40	15 - 70	
No. 200	5 - 30	

<u>Percent Passing No. 200 Sieve</u>	<u>Maximum Liquid Limit</u>	<u>Maximum Plastic Index</u>
5 - 10	50	20
11 - 20	40	15
21 - 30	35	10

These recommendations are intended as guidelines to specify a readily available, prequalified material. Adjustments to the recommended limits can be provided to allow the use of other granular, non-expansive material. Any such adjustments must be made and approved by the geological engineer, in writing, prior to importing fill to the site.

All structural fill, and utility trench backfill in all structural areas, should be densified to a minimum 90 percent relative compaction. Nonstructural fill should be densified to a least 85 percent relative compaction to minimize consolidation and erosion. If the native granular soils have greater than 30 percent retained on the 3/4 inch sieve, standard density testing is not valid. A proof rolling program of at least 5 single passes of a minimum 10 ton roller in mass grading or at least 5 complete passes with hand compactors in footing trenches is recommended. Acceptance of this "rockfill" is based upon observation of lift thickness, moisture content, and applied compactive effort. In all cases the finished surface should be smooth, firm and show no signs of deflection.

Shrinkage and Subsidence

Subsidence of surface native soils should average 0.1 feet. Granular alluvial soils excavated and recompactd in structural fills should experience quantity shrinkage of approximately 10 percent, including removal of oversize particles. In other words, one cubic yard of excavated granular alluvium will generate about 0.9 cubic yards of structural fill.

Foundation Design

Footings underlain by granular native soil or structural fill can be designed for a net maximum allowable bearing pressure of 2500 pounds per square foot. The net allowable bearing pressure is that pressure at the base of the footing in excess of the adjacent overburden pressure. This allowable bearing value should be used for dead plus ordinary live loads. Ordinary live loads are defined as being that portion of the design live load which will be present during the majority of the life of the structure. Design live loads are those loads which are produced by the use and occupancy of the building such as by moveable objects including people or equipment. This bearing value may be increased by 1/3 for total loads. Total loads are defined as the maximum load imposed by the required combinations of dead load, design live loads, snow loads, and wind or seismic loads. With this allowable bearing pressure, total settlements of approximately 1/2-inch should be anticipated with differential settlements of approximately one-half of this amount.

Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction on the bottom of the footing. The coefficient of friction is 0.40. Design values for active and passive equivalent fluid pressures are 40 and 350 pounds per cubic foot per foot of depth, respectively. These design values are based on spread footings bearing on and backfilled with structural fill. All exterior footings should be placed a minimum 2 feet below adjacent finish grade for frost protection.

Slope Stability and Erosion Control

Stability of cut and filled surfaces involves two separate aspects. The first concerns true slope stability related to mass wasting, landslides, or the enmasse downward movement of soil or rock. Stability of cut and fill slopes is dependent upon shear strength, unit weight, moisture content, and slope angle. The Uniform Building Code adopted by the Washoe County allows cut and fill slopes up to 2:1 (horizontal to vertical) in the type of soils present at this site. The exploration and testing program conducted during this investigation confirms 2:1 slopes will be stable.

The second aspect of stability involves erosion potential and is dependent on numerous factors involving grain size distribution, cohesion, moisture content, slope angle and the velocity of the water or wind on the ground surface. Slopes between 3:1 and 5:1 can be stabilized by hydroseeding. Slopes steeper than 3:1 often require mechanical stabilization. No major cut or fill slopes are expected for this project. Temporary (during construction) and permanent (after construction) erosion (dust) control will be required for all disturbed areas. The contractor shall prevent dust from being generated during construction in compliance with all applicable city, county, state, and federal regulations and shall submit an acceptable dust control plan to the Washoe County District Health Department prior to starting site preparation or earthwork. The project specifications should include an indemnification by the contractor of the owner and engineer for any dust generation during the construction period. The owner will be responsible for mitigation of dust after his acceptance of the project.

Pond

The proposed pond can be constructed in structural fill as described under **Grading and Filling** or in cut. On-site clayey sand soils may be used in a minimum 18 inch thickness to line the pond, provided the material has, at least, 25 percent passing the No. 200 sieve, a plastic index of at least, 12, and no particles larger than 3 inches.

Site Drainage

Subsurface

Groundwater was encountered at depth of 7.2 feet in test pit 3 located in the southeast corner of the site. The test pit was approximately 100 feet east of an active irrigation ditch just beyond the east property line. As Phase 4 area was not under irrigation at the time of our exploration, we anticipate higher groundwater levels during irrigation season. Since the lots and the surrounding area will, likely, continue to be irrigated, some mitigation should be provided. Future homes should be carefully sited and have foundation levels placed a minimum 4 feet above the maximum high water table. Monitoring during the irrigation season would be necessary to establish this elevation.

Storm drains should be designed to be as deep as possible in order to maximize their effectiveness in dewatering the site. The following procedures have been proven to be extremely effective in dewatering most of the east side of the Truckee Meadows. All storm drains should be open jointed and backfilled with drain rock. Other utility trenches, such as for water lines and sewer lines, should also be backfilled rock and should be interconnected with storm drain backfill in order to provide an interior network of subsurface drains. Drain backfill should extend to within 2 feet of the surface. The drain rock should be separated from overlying granular soil backfill by either a 6-inch thick layer of pea-gravel or a 4 ounce nonwoven geofabric, in all structural areas, to prevent infiltration and clogging of drain rock by the native soils. Depending on the severity of the potential groundwater problem, some lots may require design of specific subdrains.

Surface

Each lot buyer should retain a civil engineer to design a project specific grading plan to place finish grade and finish floor elevations above FEMA flood elevations. Adequate surface drainage should be provided away from all structures. A system of roof gutters and downspouts is recommended to collect roof drainage and direct it away from the foundation.

Stemwall backfill should be thoroughly compacted to decrease permeability and reduce the potential for irrigation and storm water to enter the crawl space. Positive crawl space drainage should be provided. This is most easily accomplished by grading the crawl space to drain to one or more localized areas and providing 3-inch diameter pipes to daylight beneath the footings. Often, adequate drainage cannot be attained by daylighting direct drain. An alternate is to grade the crawl space to drain to the sewer lateral and gravel packing the lateral from the crawl space to the sewer main in the street. To minimize entrance of surface waters into the crawl space, visqueen should be draped down the outside perimeter of the stemwall, over the lip of footing, and outward into the yard areas at footing grade levels for a minimum horizontal distance of 5 to 6 feet. Ponding of water on finish grade or at the edge of pavements should be prevented by proper grading.

Asphaltic Concrete

Based on the index testing, an R-value of 35 was estimated for the granular soils that will be exposed along Passa Tempo Drive. For design purposes, a conservative R-value of 20 was used to accommodate minor variations in soil and fill quality.

The existing section of Passa Tempo Drive serves 12 lots. Phase 4 and all future phases will add 15 more lots for an ultimate total of 27. The EAL for Passa Tempo Drive was estimated in a very conservative manner using the procedure summarized in Table 5.

TABLE 5 - Traffic Analysis For Residential Streets

Design Life	20 years (7300 days)
Maximum Lots	27
10 Trips per day per lot (Institute Transportation Engineers, 1987)	
2% Trucks with Truck Factor of 0.30 (Assumed)	
Construction Traffic + 20 trucks per lot at T.F. = 0.59 (Assumed)	
% of Traffic in the Design Lanes = 50	
$EAL_{20} = (7300)(27)(10)(.02)(.30)(.5) + (27)(20)(.59)(.5)$	
$EAL_{20} = 5,913 + 160 = 6.1 \times 10^3$	

Using this EAL₂₀, a design R-value of 20 and the Asphalt Institute Pavement Design Manual (1991) results in the structural section presented in Table 6.

TABLE 6 - Recommended Minimum Structural Sections

<u>Street</u>	<u>Classification</u>	<u>AC</u>	<u>Type II Base</u>
Passa Tempo Drive	residential	3"	6"

This structural section also meets current Washoe County requirements.

All aggregate base beneath concrete slabs should be densified to at least 95 percent relative compaction. Aggregate leveling courses will be too thin for proper density testing but should be compacted by a minimum 5 passes with a minimum 10 ton drum roller.

ANTICIPATED CONSTRUCTION PROBLEMS

Depending on the season of construction and irrigation practices, soft wet surface soils may make for difficult travel by construction equipment. Identification and proper preparation and treatment of native clay soils will be difficult during a mass grading operation. Minor problems may be encountered in trenching due to the presence of small to large boulders in areas of granular (outwash) soil.

QUALITY CONTROL

All plans and specifications should be reviewed for conformance with this geotechnical report and approved by the Geological Engineer prior to submitting to the building department for review.

The recommendations presented in this report are based on the assumption that sufficient field testing and construction review will be provided during all phases of

construction. We should review the final plans and specifications for conformance with the intent of our recommendations. Prior to construction, a pre-job conference should be scheduled to include, but not be limited to, the Owner, Architect, Civil Engineer, the General Contractor, Earthwork and Materials Sub-Contractors, Building Official and Geological Engineer. The conference will allow parties to review the project plans, specifications, and recommendations presented in this report and discuss applicable material quality and mix design requirements. All quality reports should be submitted to, and reviewed by, the Geological Engineer.

During construction, we should have the opportunity to provide sufficient on-site observation of preparation and grading, overexcavation, fill placement, foundation installation and paving. These observations would allow us to verify that the geotechnical conditions are as anticipated and that the Contractor's work is in conformance with the approved plans and specifications.

STANDARD LIMITATION CLAUSE

This report has been prepared in accordance with generally accepted geotechnical practices. The analyses and recommendations submitted are based upon field exploration performed at the locations shown on Plate 1 - Plot Plan, of this report. This report does not reflect soils variations that may become evident during the construction period, at which time re-evaluation of the recommendations may be necessary. We recommend our firm be retained to perform construction observation in all phases of the project related to geotechnical factors to insure compliance with our recommendations. The owner shall be responsible for distribution of this geotechnical investigation to all designers and contractors whose work is related to geotechnical factors.

Equilibrium water level readings were made on the date shown on Plate 2 -Log of Borings, of this report. Fluctuations in the water table may occur due to rainfall,

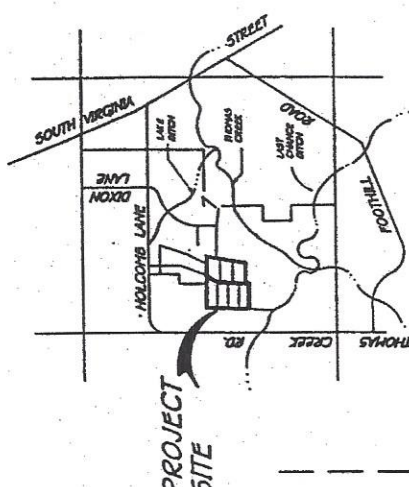
temperature, seasonal runoff, or adjacent irrigation practices. Construction planning should be based on assumptions of possible variations.

This report has been prepared to provide information allowing the Architect or Engineer to design the project. In the event of changes in the design or location of the project from the time of this report, recommendations should be reviewed and possibly modified by the Geological Engineer. If the Geological Engineer is not accorded the privilege of making this recommended review, he can assume no responsibility for misinterpretation or misapplication of his recommendations or their validity in the event changes have been made in the original design concept without his prior review. The Geological Engineer makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement and included in this report.

REFERENCES

- Bonham, H. F., and Rogers, D.K., 1983, *Geologic map, Mt. Rose Quadrangle*: NBMG, map 4Bg.
- Institute of Transportation Engineers, 1987, *Trip Generation*, Code 210, 4th Edition.
- NAVFAC (Naval Facilities Engineering Command), 1982, *Foundations and Earth Structure*, Design Manual 7.2.
- Portland Cement Association, 1988, *Design of Heavy Industrial Concrete Pavements*, Concrete Information brochure, 15234.01P
- Ryall, A. and Douglas, B. M., 1976, *Regional Seismicity*, Reno Folio: NBMG.
- Szecsody, G. C., 1983, *Earthquake Hazards Map, Mt. Rose Quadrangle*: NBMG, map 4Bi.
- The Asphalt Institute, 1991, *Thickness Design - Asphalt Pavements for Highways and Streets*, Manual Series No. 1 (MS-1).

PLATES



VICINITY MAP
N.T.S.

Please see test logs on
The following page.

■ TEST PIT LOCATION

RENO/SPARKS, NEVADA
LAS VEGAS, NEVADA
PHOENIX, ARIZONA

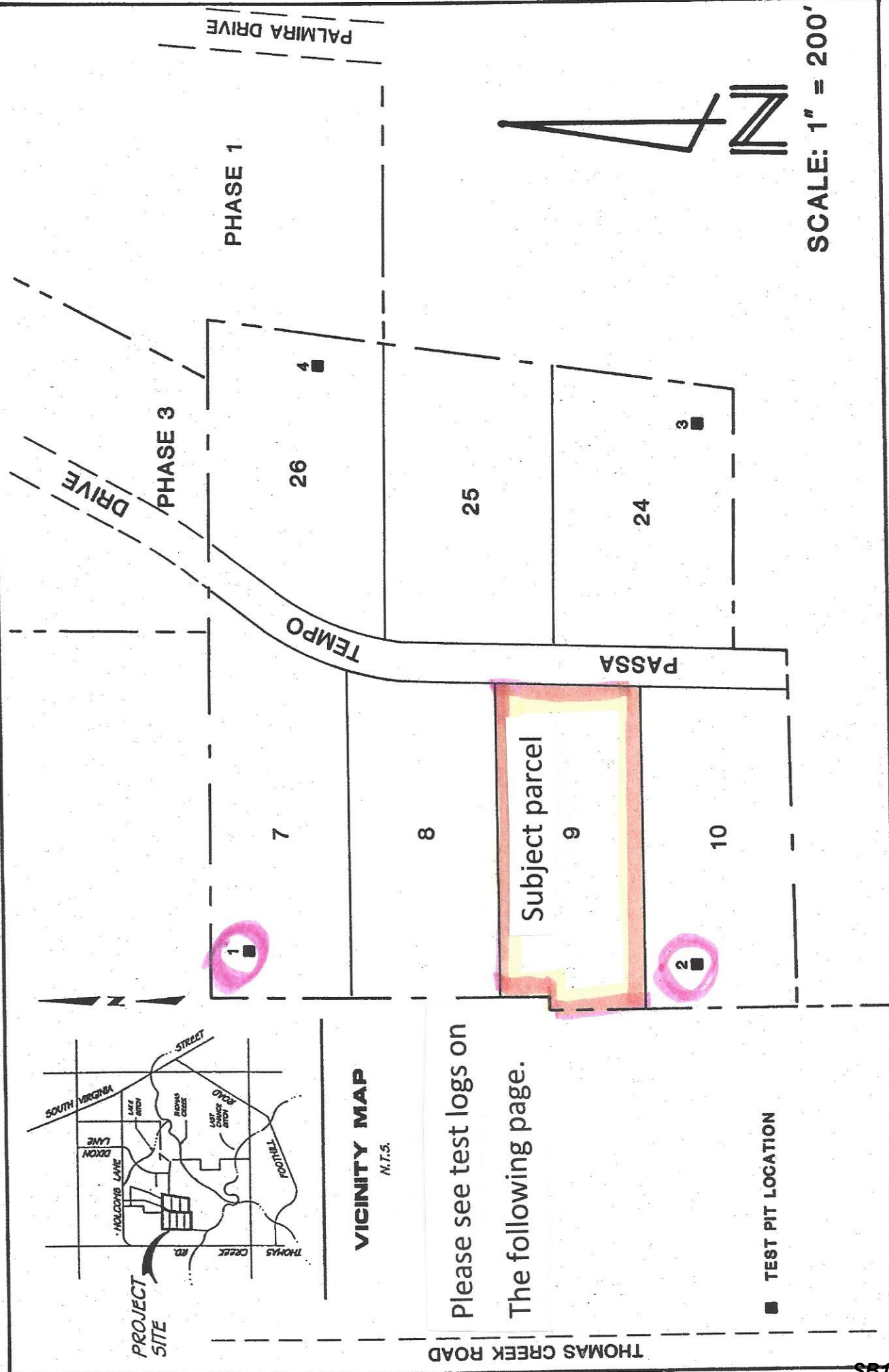


Plot Plan
CASAZZA RANCH ESTATES PHASE 4

PROJECT NO. 2260-01-1

PLATE NO. 1

SCALE: 1" = 200'



TEST PIT LOG

TEST PIT NO. <u>1</u>	GROUND ELEVATION <u>4571</u>
LOGGED BY <u>T. Loken</u>	GROUND WATER DEPTH <u>Not Encountered</u>
DATE <u>3-13-92</u>	DATE MEASURED _____

NOTES	SAMPLE NUMBER	MOISTURE PERCENT	DEPTH	LOG	DESCRIPTION
	1A	11.4	2	○	0 - 2.0 Moist, compact, dark brown <u>Silty Gravelly Sand</u> with 15% slightly plastic fines, 60% very fine to coarse sand, 25% rounded gravel; minor cobbles to 6" diameter.
			4	○	2.0 - 3.0 Moist, compact, brown <u>Silty Sand</u> with 20% non-plastic fines, 80% very fine to coarse sand. Trace rounded gravel of cobbles.
	1B	10.9	6	○	3.0 - 9.0 Moist, dense, brown <u>Sandy Gravel</u> with 5% non-plastic fines, 45% very fine to coarse sand, 50% gravel to 3" diameter. Cobbles to 10" diameter comprise 5% to 10% of mass.
			8	○	
			10	○	9.0 - 11.0 Moist, dense, brown moderately cemented <u>Sand</u> with 5% non-plastic fines, 95% very fine to coarse sand. Minor gravel and cobbles to 6" diameter.
			12	○	

TEST PIT NO. <u>2</u>	GROUND ELEVATION <u>4586</u>
LOGGED BY <u>T. Loken</u>	GROUND WATER DEPTH <u>Not Encountered</u>
DATE <u>3-13-92</u>	DATE MEASURED _____

NOTES	SAMPLE NUMBER	MOISTURE PERCENT	DEPTH	LOG	DESCRIPTION
	2A		2	○	0 - 1.0 Moist, compact, dark brown <u>Clayey Sand</u> with 20% low plastic fines, 75% very fine to coarse sand, 5% gravel to 3" diameter. Trace rounded cobbles to 6" diameter.
			4	○	1.0 - 2.5 Moist, compact, brown <u>Silty Gravelly Sand</u> with 15% non-plastic fines, 55% very fine to coarse sand, 30% gravel to 3" diameter. Trace cobbles.
	2B	12.8	6	○	2.5 - 5.0 Moist, compact to dense, weakly cemented silty sand with 10% to 25% slightly plastic fines, 75% to 90% very fine to medium sand. Minor coarse sand, 5% gravel to 3" diameter.
			8	○	
			10	○	5.0 - 9.5 Moist, dense, brown <u>Sandy Gravel</u> with 5% non-plastic fines, 45% very fine to coarse sand, 50% rounded gravel to 3" diameter. Cobbles to 8" diameter, comprise 5% of mass.
			12	○	

Description: Describe soil type by unified soil classification system with emphasis on in-place or natural condition.



• RENO/SPARKS
• LAS VEGAS




GEOTECHNICAL DIVISION

PROJECT NO. 2260-01-1
PLATE 2a




SB15-010
EXHIBIT D

TEST PIT LOG

TEST PIT NO. <u>3</u>	GROUND ELEVATION <u>4573</u>
LOGGED BY <u>T. Loken</u>	GROUND WATER DEPTH <u>7.2'</u>
DATE <u>3-13-92</u>	DATE MEASURED <u>3-13-92</u>

NOTES	SAMPLE NUMBER	MOISTURE PERCENT	DEPTH	LOG	DESCRIPTION
	3A	13.3	2		0 - 1.5 Moist, compact, dark brown <u>Silty Sand</u> with 20% slightly plastic fines, 80% very fine to coarse sand. Minor gravel and cobbles to 6" diameter.
			4		1.5 - 3.0 Moist, compact, brown <u>Clayey Sand</u> with 30% low to medium plastic fines, 65% very fine to coarse sand, 5% gravel; minor cobbles to 8" diameter. Grades into sandy gravel:
			6		3.0 - 9.5 Moist, to wet, dense, brown <u>Sandy Gravel</u> with 5% non-plastic fines, 40% very fine to coarse sand, 55% rounded gravel to 3" diameter. Cobbles to 10" comprise 10% to 15% of mass.
			8		
			10		
			12		

TEST PIT NO. <u>4</u>	GROUND ELEVATION <u>4563</u>
LOGGED BY <u>T. Loken</u>	GROUND WATER DEPTH <u>Not Encountered</u>
DATE <u>3-13-92</u>	DATE MEASURED _____

NOTES	SAMPLE NUMBER	MOISTURE PERCENT	DEPTH	LOG	DESCRIPTION
			2		0 - 1.0 Moist, compact, dark brown <u>Silty Sand</u> with 15% non-plastic fines, 85% very fine to coarse sand. Trace gravel and cobbles to 6" diameter.
			4		1.0 - 2.0 Moist, compact, brown <u>Silty to Clayey Sand</u> with 10% low plastic fines, 90% very fine to coarse sand. Trace gravel and cobbles to 6" diameter.
			6		2.0 - 10.2 Moist, dense, brown <u>Sandy Gravel</u> with 5% non plastic fines, 45% very fine to coarse sand, 50% gravel to 3" diameter. Cobbles to 8" diameter comprise 10% of mass.
			8		
			10		
			12		

Description: Describe soil type by unified soil classification system with emphasis on in-place or natural condition.

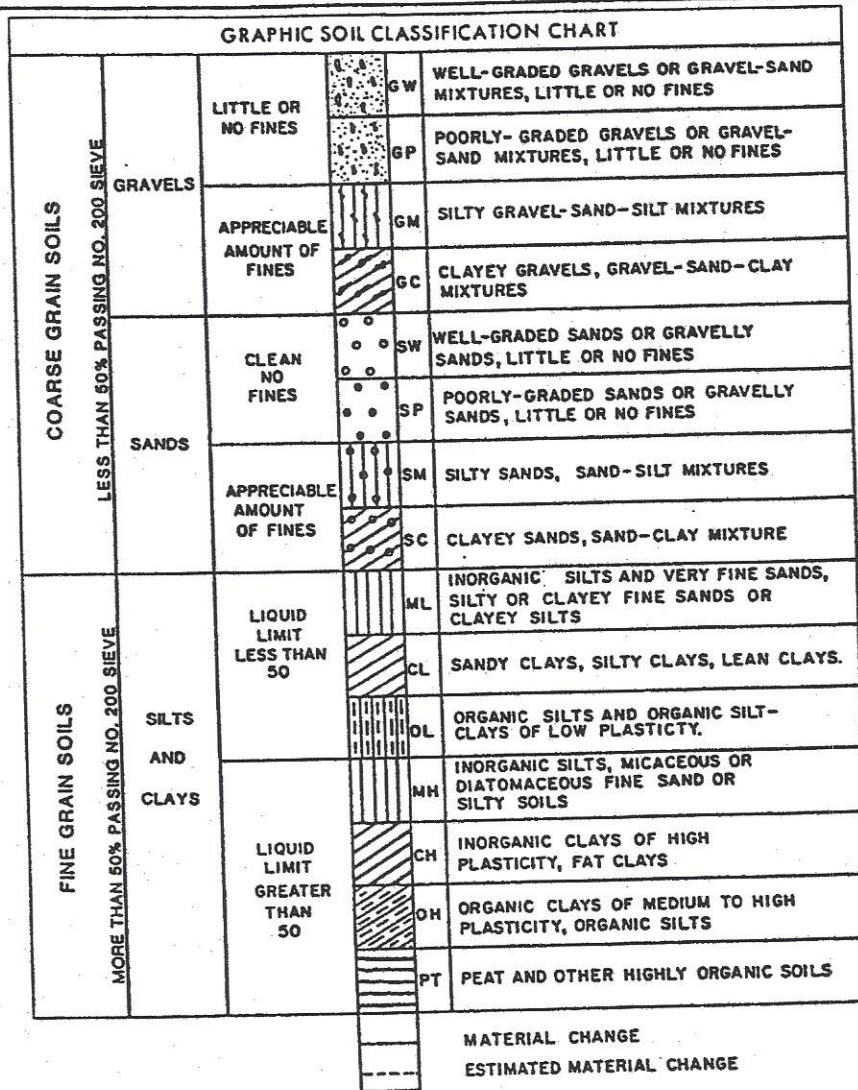


• RENO/SPARKS
• LAS VEGAS

GEOTECHNICAL DIVISION

PROJECT NO. 2260-01-1
PLATE 2b

SB15-010
EXHIBIT D



GRAIN SIZE TERMINOLOGY

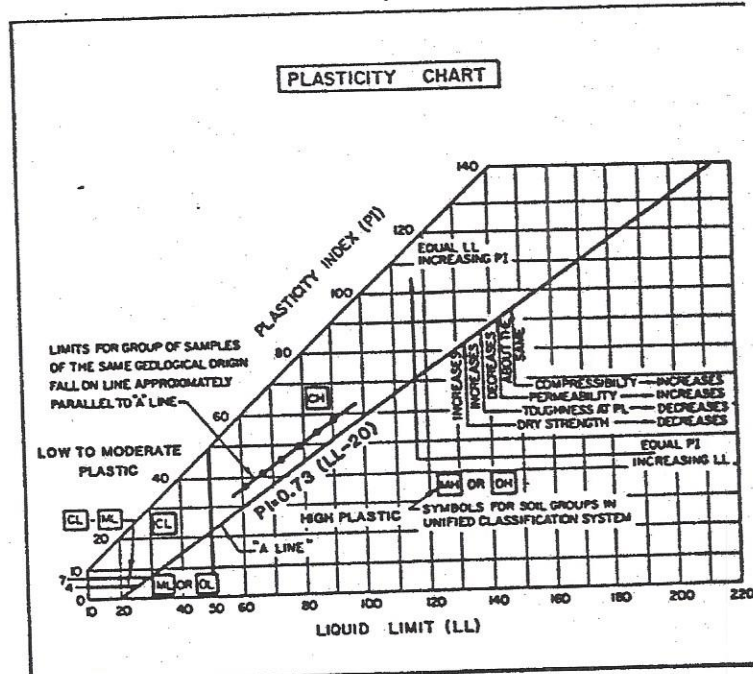
Major Component of Sample	Size Range
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300 mm to 75 mm)
Gravel	3 in. to #4 sieve (75 mm to 2 mm)
Sand	#4 to #200 sieve (2 mm to .075 mm)
Silt or Clay	Passing #200 sieve (0.075 mm)

RELATIVE DENSITY OF GRANULAR SOILS:

N-Blows/IL	Relative Density
0-4	Very Loose
5-10	Loose
11-30	Compact
31-60	Dense
greater than 60	Very Dense

CONSISTENCY OF COHESIVE SOILS:

Unconfined Compressive Strength, f_{cu} , psi	N-Blows/IL	Consistency
less than 500	0-1	Very Soft
500-1,000	2-4	Soft
1,000-2,000	5-8	Firm
2,000-4,000	9-15	Stiff
4,000-8,000	16-30	Very Stiff
8,000-16,000	31-60	Hard
greater than 16,000	greater than 60	Very Hard



DATA PRINT NJ00980



RENO/SPARKS, NEVADA
LAS VEGAS, NEVADA
PHOENIX, ARIZONA

Project No. 2260-01-1

Plate 3
SB15-010
EXHIBIT D

TEST RESULTS

MECHANICAL ANALYSIS

<u>Sample Number</u>	<u>1A</u>	<u>1B</u>	<u>2B</u>	<u>3A</u>
<u>Sieve Size</u>	<u>Percent By Weight Passing</u>			
3 Inch		97		
2 Inch	100	88		
1 Inch	85	71		
3/4 Inch	85	65	100	100
1/2 Inch	81	60	98	99
3/8 Inch	78	55	98	99
No. 4	72	48	95	95
No. 10	65	39	90	89
No. 40	47	25	74	69
No. 100	24	10	40	40
No. 200	14	6	26	31
<u>Liquid Limit</u>	-	-	-	30
<u>Plastic Index</u>	-	NP	-	15
<u>Moisture Content</u>	11.4	10.9	12.8	13.3

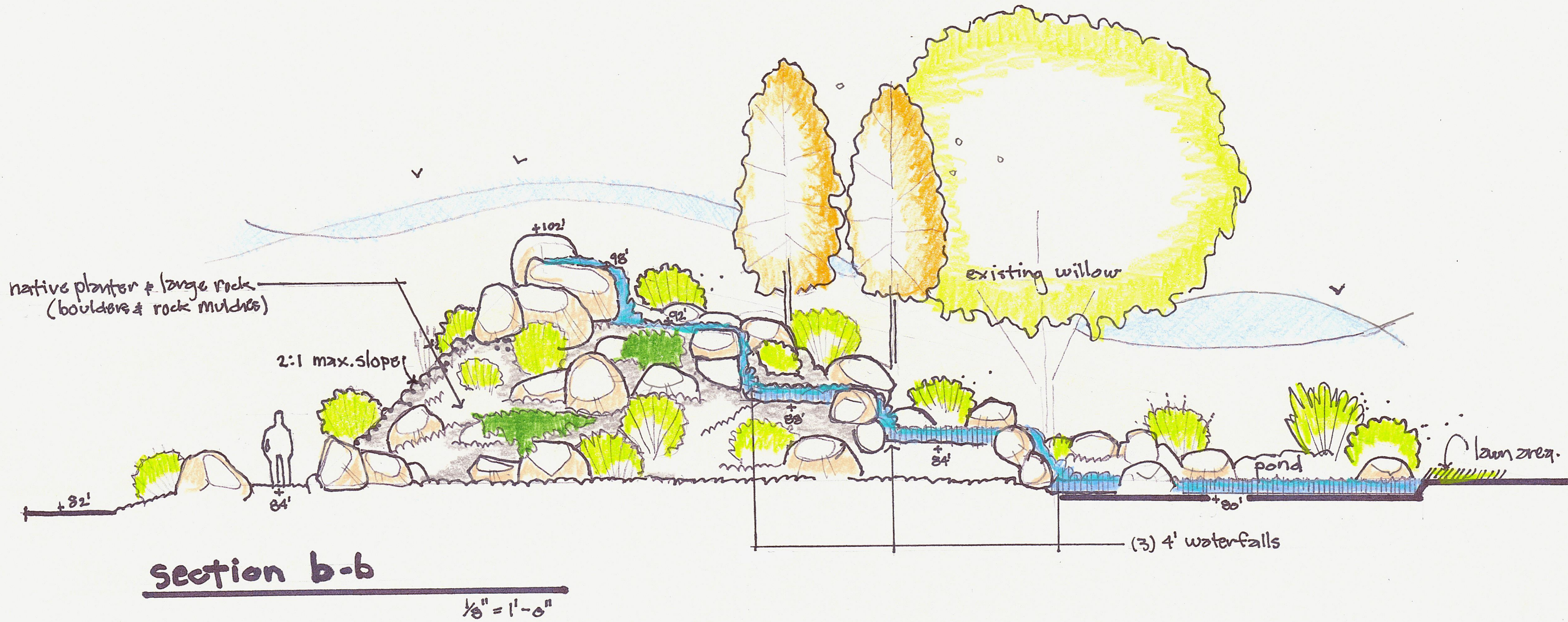
DATEPRINT N30980



RENO/SPARKS, NEVADA
LAS VEGAS, NEVADA
PHOENIX, ARIZONA

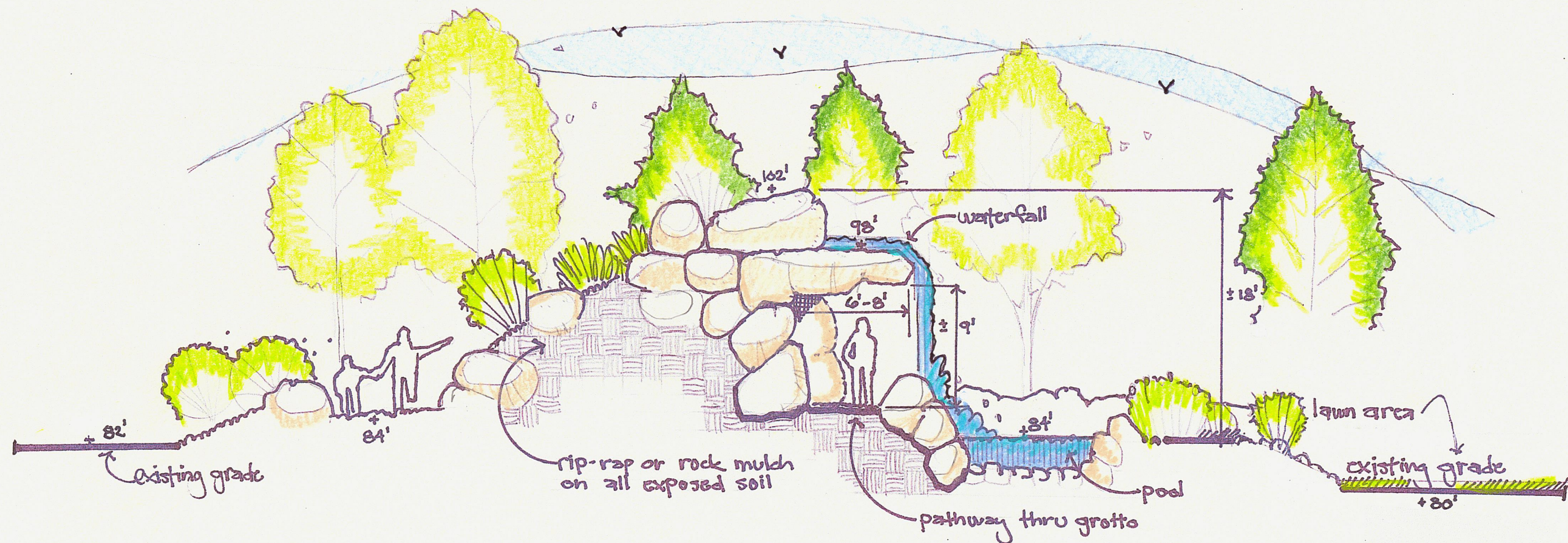
Project No. 2260-01-1
Plate 4

SB15-010
EXHIBIT D



section b-b

$\frac{1}{8}'' = 1'-0''$



section a-a

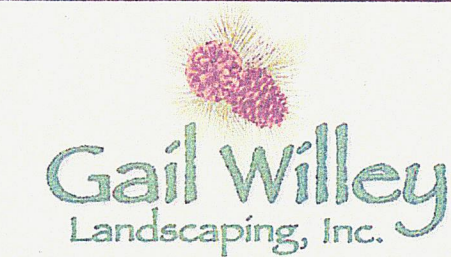
$\frac{1}{8}'' = 1'-0''$

Conceptual Water Feature Sections

$\frac{1}{8}'' = 1'-0''$

12.8.15
Issue & Date:

Sheet



9825 S. Virginia St.
Reno, Nevada 89511
(775) 853-8733

Iremonger Residence

Reno NV

9695 Passa Tempo Drive

limits of S.U.P. grading



Design Lead: _____
 Designer: _____
 Project Number: _____
 Date: 2015.11.11

Revisions	
By:	Date: