

DRAFT AGENDA

TOWN OF LYONS
7:00 P.M., MONDAY, MAY 9, 2016

SPECIAL BOARD OF TRUSTEES MEETING
SHIRLEY F. JOHNSON COUNCIL CHAMBER
LYONS TOWN HALL, 432 5TH AVENUE, LYONS, COLORADO

1. Roll Call And Pledge Of Allegiance
2. Approval Of The Agenda
3. Ordinances
 - Public Hearing on Second Reading
 - 3.1. Public Hearing, Second Reading, Ordinance 999, An Ordinance Conditionally Rezoning Property Within The Town Of Lyons, Commonly Known As 501 West Main Street, From The R-2 Medium Density Zone District To The PUD-C Commercial Planned Unit Development District And Conditionally Approving The Final PUD Plan
 - 3.1.i. Ordinance 999 - Riverbend Rezoning And Final PUD Plan Approval KBG Final With RBJ Exhibits

Documents: [ORDINANCE 999 - RIVERBEND REZONING AND FINAL PUD PLAN APPROVAL KBG FINAL WITH RBJ EXHIBITS 5.4.16.PDF](#)
 - 3.1.ii. River Bend Staff Report

Documents: [RIVER BEND STAFF REPORT BOT 4.18.16 REV 4.28.16 AS SENT.PDF](#)
 - 3.1.iii. Written Statement

Documents: [WRITTEN STATEMENT-BOT FINAL-042716.PDF](#)
 - 3.1.iv. Request And Rationale

Documents: [REQUEST RATIONALE-BOT FINAL-042716.PDF](#)
 - 3.1.v. Drawings

Documents: [DRAWINGS-BOT FINAL-042716.PDF](#)
 - 3.1.vi. Amended Preliminary Report

Documents: [AMENDED PRELIM REPORT-BOT FINAL-042816.PDF](#)
4. Other Items Of Concern, If Any
5. Adjournment

"The Town of Lyons will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs, or activities. Persons needing accommodations or special assistance should contact the Town at hr@townoflyons.com as soon as possible, but no later than 72 hours before the scheduled event."

**TOWN OF LYONS, COLORADO
ORDINANCE NO. 999**

**AN ORDINANCE CONDITIONALLY REZONING
PROPERTY WITHIN THE TOWN OF LYONS, COMMONLY
KNOWN AS 501 WEST MAIN STREET, FROM THE R-2
MEDIUM DENSITY ZONE DISTRICT TO THE PUD-C
COMMERCIAL PLANNED UNIT DEVELOPMENT
DISTRICT AND CONDITIONALLY APPROVING THE
FINAL PUD PLAN**

WHEREAS, pursuant to C.R.S. § 31-23-301, the Town of Lyons possesses the authority to zone, rezone, change, supplement, and revise the zoning classifications or designation of property and to regulate land uses within the Town of Lyons; and

WHEREAS, JM Associates, Inc. (“Applicant”) on behalf of Lyons Properties, LLC, a Colorado limited liability company (“Owner”) has applied for the rezoning of certain property from the R-2 Medium Density Zone District to PUD-C Commercial Planned Unit Development District; and

WHEREAS, the property is generally described as 501 West Main, in the Town of Lyons (the “Subject Property”); and

WHEREAS, the Subject Property consists of 5.646 acres, more or less, and is described in Exhibit A attached hereto and incorporated herein by reference; and

WHEREAS, the Applicant has also submitted a Final PUD Plan for the Subject Property for approval; and

WHEREAS, in accordance with Section 16-4-80(a) of the Lyons Municipal Code, the Final PUD Plan has been reviewed by the PCDC at a public hearing and has been approved, subject to the conditions set forth in Exhibit B attached hereto and incorporated herein by reference; and

WHEREAS, as required by law, duly noticed public hearings were held before the Town of Lyons Planning and Community Development Commission, which heard testimony and considered other evidence before making certain findings of fact, concluding that the rezoning application and the Final PUD Plan met and satisfied all of the applicable criteria set forth in Lyons Municipal Code, and recommending that the Board of Trustees approve both the rezoning application and the Final PUD Plan; and

WHEREAS, also as required by law, the Board of Trustees conducted a duly noticed public hearing, considered the evidence presented, adopted the Planning and Community Development Commission’s findings of fact and approved both the application for rezoning to the PUD-C zone district and the Final PUD Plan, subject to certain conditions recommended by staff and adopted by the Board.

WHEREAS, the administrative record for this case includes, but is not limited to, the Lyons Municipal Code, the Lyons Comprehensive Plan, the Lyons Disaster Recovery Program and all other applicable ordinances, resolutions and regulations together with all Town of Lyons land use application processing policies that relate to the subject matter of the public hearing, the land use application and accompanying maps, reports, studies and all other submittals of the applicant, any evidence or correspondence submitted by members of the public at the public hearing, and the staff files and reports of the Town Planner pertaining to the application; and

WHEREAS, pursuant to Article 23 of Title 31, C.R.S., as amended, the Board of Trustees has determined that the proposed zoning of the Subject Property, subject to any conditions set forth herein, furthers the public health, safety, convenience and general welfare of the community; generally conforms with the Town's Comprehensive Plan, as amended and updated; is compatible with surrounding uses; and otherwise meets the applicable criteria set forth in Chapter 16 of the Lyons Municipal Code; and

WHEREAS, approval of this Ordinance on first reading is intended only to confirm that the Board of Trustees desires to comply with state law and the Lyons Municipal Code by setting a public hearing in order to provide the Owner and the public an opportunity to present testimony and evidence regarding the re-zoning application and Final PUD Plan. Approval of this Ordinance on first reading does not constitute a representation that the Board of Trustees, or any member of the Town Board, supports, approves, rejects, or denies the proposed zoning or Final PUD Plan.

NOW THEREFORE, BE IT ORDAINED BY THE BOARD OF TRUSTEES OF THE TOWN OF LYONS, BOULDER COUNTY, COLORADO:

Section 1. Recitals Incorporated. The recitals contained above are incorporated herein by reference and are adopted as findings and determinations of the Board of Trustees.

Section 2. Rezoning of Property Conditionally Approved. The Subject Property is hereby conditionally rezoned from the R-2 Medium Density Zone District to the **PUD-C Commercial Planned Unit Development District**, the Board specifically finding that the rezoning is supported by the Town of Lyons Comprehensive Plan. Following the effective date of this Ordinance and compliance with the conditions set forth below, the Subject Property shall be zoned PUD-C. Approval of the PUD-C zoning shall be and is subject to the following conditions of approval:

- (1) The Owner shall approve an amendment to the Memorandum of Agreement dated January 12, 2016 ("MOA"), in a form acceptable to the Board of Trustees and the Town Attorney, which amendment shall modify the MOA to clarify the process by which the Owner and the Town shall permanently establish the boundary line between the Subject Property and Meadow Park;

- (2) The boundary line agreement or District Court action contemplated in Section V of the MOA, as amended, is completed to the satisfaction of the Town and a fully executed and notarized copy of the boundary line agreement or certified copy of the District Court order is recorded in the real property records of Boulder County, Colorado; and
- (3) The legal description of the Subject Property set forth on Sheet 1 of the Final PUD Plan be revised to reflect the revised boundaries of the Subject Property established by the recordation of the boundary line agreement or District Court order contemplated in the MOA, and that the modification to the legal description on Sheet 1 of the Final PUD Plan be completed prior to recordation of the Final PUD Plan mylar.

The conditions set forth in this Section 2 shall be fully satisfied by the Applicant and Owner on or prior to August 30, 2016. If the conditions are not satisfied, the rezoning of the Subject Property shall not be effective.

Section 3. Amendment of Zoning Map. Following the satisfaction of the conditions set forth in Section 2 of this Ordinance above, the Town Administrator, Town Planner, and other appropriate staff are authorized and instructed to revise the official zoning map for the Town of Lyons in accordance with Section 16-15-60 of the Municipal Code so that the zoning designation described in this Ordinance is illustrated in graphic form. Failure to amend the official zoning map in accordance with this Ordinance shall not, however, have the effect of limiting, preventing or precluding the effect or effective date of this Ordinance.

Section 4. Final PUD Plan Conditionally Approved. The Final PUD Plan for the Subject Property is hereby conditionally approved, based on a determination that all applicable standards for approval of the Final PUD Plan have been met. Approval of the Final PUD Plan shall be and is subject to the following conditions of approval:

- (1) The conditions set forth in Exhibit B, as recommended to the Board of Trustees by the PCDC;
- (2) The Applicant and Owner shall resolve and correct any technical issues as directed by Town staff prior to recordation of the Final PUD Plan mylar;
- (3) The legal description of the Subject Property set forth on Sheet 1 of the Final PUD Plan be revised to reflect the revised boundaries of the Subject Property established by the recordation of the boundary line agreement or District Court order contemplated in the MOA, and that the modification to the legal description on Sheet 1 of the Final PUD Plan be completed prior to recordation of the Final PUD Plan mylar.

(4) The Applicant and Owner shall pay any and all remaining fees and costs incurred by the Town and its consultants in review and processing of the rezoning and Final PUD Plan application in full prior to recordation of the Final PUD Plan mylar.

Section 5. The Town shall be authorized to make any changes to the mylar form of the approved Final PUD Plan as may be needed to conform the Final PUD Plan to the form and content requirements of the Lyons Municipal Code in effect at the time the Final PUD Plan is submitted for signature(s) and to make such other changes that are expressly authorized or required pursuant to this Ordinance.

INTRODUCED AND PASSED ON FIRST READING THIS ____ DAY OF APRIL, 2016.

INTRODUCED, PASSED, ADOPTED AND ORDERED PUBLISHED THIS ____ DAY OF MAY, 2016.

TOWN OF LYONS, COLORADO

Connie Sullivan, Mayor

ATTEST:

Debra K. Anthony, Town Clerk

Exhibit A
Legal Description of Subject Property

A TRACT OF LAND IN THE SW ¼ OF SECTION 18, T3N, R70W OF THE 6TH P.M., TOWN OF LYONS, COUNTY OF BOULDER, STATE OF COLORADO. BEARINGS ARE BASED ON THE NORTH-SOUTH CENTERLINE OF SAID SECTION 18 AND ASSUMED AS BEARING N00°00'45"E, WITH ALL OTHER BEARINGS HEREIN RELATIVE THERETO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE C. 1/4 OF SAID SECTION 18;
THENCE ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 18, S00°00'45"W, 431.90 FEET TO A POINT ON THE SOUTH LINE OF THE R.O.W. OF STATE HIGHWAY NO. 66 (AKA HIGHWAY 36);
THENCE LEAVING SAID NORTH-SOUTH CENTERLINE AND ALONG SAID SOUTH R.O.W., N38°33'00"W, 28.98 FEET TO THE TRUE POINT OF BEGINNING, SAID POINT ALSO BEING THE CENTERLINE OF NORTH ST. VRAIN RIVER;
THENCE ALONG THE CENTERLINE OF SAID NORTH ST. VRAIN RIVER, THE FOLLOWING 7; CALLS:
S24°20'51"W, 172.60 FEET;
S44°05'12"W, 129.92 FEET;
S53°41'34"W, 77.56 FEET;
S71°42'55"W, 86.06 FEET;
N89°39'29"W, 187.06 FEET,
N68°22'42"W, 125.54 FEET;
N53°39'31"W, 122.97 FEET;
THENCE LEAVING SAID CENTERLINE, N71°07'35"E, 207.70 FEET;
THENCE N14°15'45"W, 132.83 FEET;
THENCE S71°07'35"W, 22.00 FEET;
THENCE S14°15'45"E, 21.50 FEET;
THENCE S71°07'35"W, 241.31 FEET;
THENCE N35°00'46"E, 189.59 FEET;
THENCE S86°58'00"E, 66.92 FEET;
THENCE N35°09'00"E, 174.68 FEET;
THENCE S83°32'00"E, 195.62 FEET;
THENCE N69°08'00"E, 162.09 FEET TO A POINT ON SAID SOUTH R.O.W. OF STATE HIGHWAY NO. 66 (AKA: HIGHWAY 36);
THENCE ALONG SAID SOUTH R.O.W., S38°33'00"E, 253.91 FEET TO THE POINT OF BEGINNING, SAID PORTION OF LAND CONTAINING 5.646 ACRES, MORE OR LESS.

Identified as "Parcel A" on survey of 501 & 503 W. Main Street as completed by England Surveying on July 30, 2008 (Job No. 535.01).

Also known as 501 W. Main, Town of Lyons, Colorado.

Exhibit B

Staff and PCDC recommended conditions of approval for Final PUD.

All conditions proposed and presented by the Applicants with this land use request as submitted, both written and graphic, are hereby incorporated into this list of conditions by reference. Some of these conditions are repeated below for emphasis and ease of administration of this land use approval moving forward. Some are amplified, clarified and/or modified below for the final record. Omission from this listing below of conditions that the applicant has proposed elsewhere in the submittal does not negate the binding nature of the PUD submittal taken as a whole with all elements duly noted and accepted with this approval.

1. As noted on Sheet A00, the Applicants have proposed and the PCDC has accepted the following sound limitations.

Event center, small use, shall be subject to the following conditions:

a. Outdoor music performed by live entertainment at events shall not include amplified instruments. Horns or percussion are not allowed. Woodwinds (e.g., clarinets, flutes, etc. are allowed. One vocalist may use a microphone with amplification.

b. Outdoor Disc Jockey (DJ) style performance of amplified recorded music is not allowed.

c. Outdoor weddings: i. During wedding ceremonies: the officiant and other members of wedding parties may use a microphone with amplification for readings, vows. Low level amplified recorded music or unamplified acoustic instruments only are allowed during the ceremony with one vocalist using a microphone with amplification. Wedding ceremonies are to be concluded no later than 5:30 pm.

ii. During cocktail hour and dinner: unamplified acoustic only instrumental music is allowed. The officiant and other members of wedding parties may use a microphone with amplification for toasts and announcements.

iii. After dinner music: unamplified acoustic only instruments are allowed with one vocalist using a microphone with amplification.

d. All music shall end by 10:00 pm.

e. Outdoor low level amplified recorded music, vocals, and public address system announcements, or any other noise generated at any wedding or other special event conducted on the property shall be carefully limited to the minimum functional sound level. All uses conducted at River Bend shall also comply with the noise restrictions set forth in Sec. 10-11-10 Unreasonable Noise of the Lyons Municipal Code as it may be amended from time to time. The Applicant or any person or entity holding a function on the subject property shall immediately reduce or eliminate any amplified or other sounds when instructed to do so by a member of the Boulder County Sheriff's Office, other law enforcement or emergency services personnel or member of Town Staff.

2. Limitations on Use. As noted on Sheet A00, the Applicants have proposed and the PCDC has accepted the limitations on use as set forth on Sheet A00. This PUD approval is restricted to the specific uses proposed as set forth on Sheet A00 in items 1 through 14. This PUD approval would require a PUD amendment approved by both the PCDC and BOT to add a use not specifically identified and approved with this review.

3. All public improvements and site design including road surfacing, utilities and drainage shall be subject to a separate plan review including review of the final layout and construction details by the Town Engineer, prior to issuance of a construction permit pursuant to the Final PUD approval.

TOWN OF LYONS
Board of Trustees Meeting

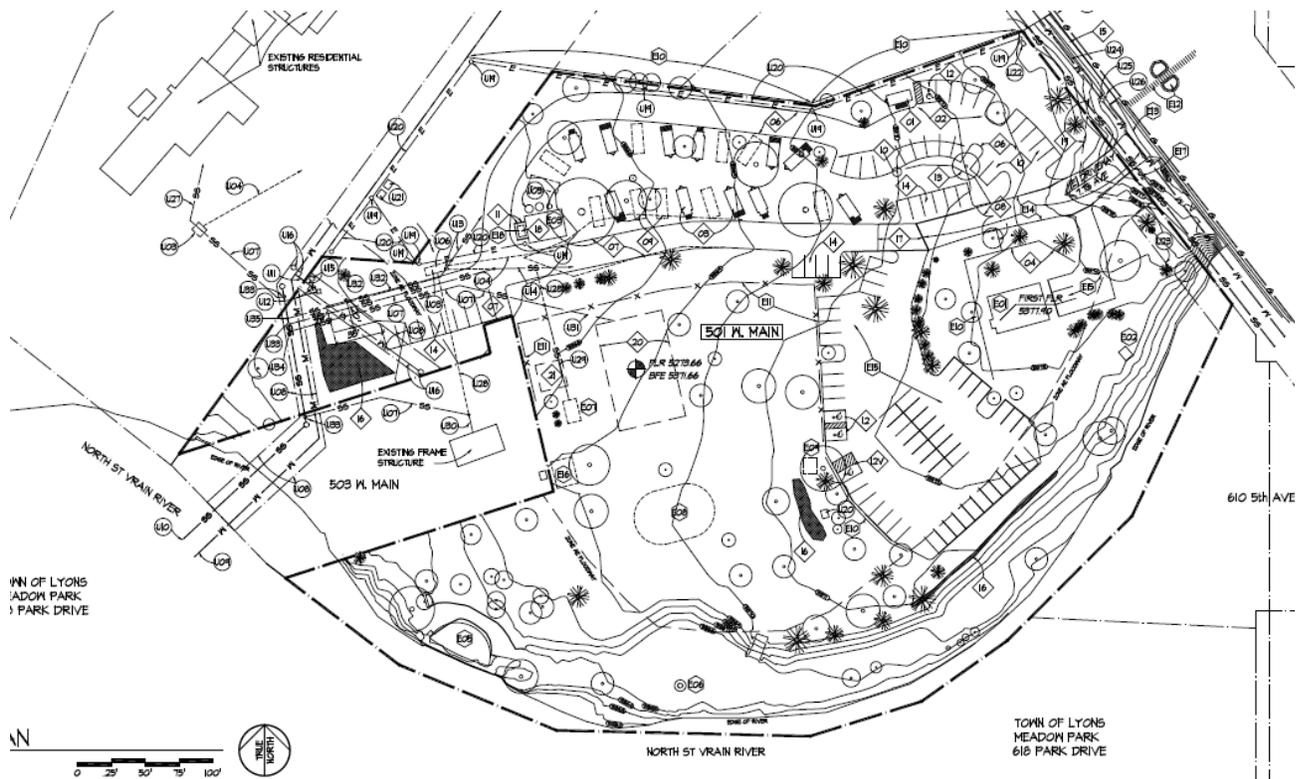
Monday, May 2, 2016

SUBJECT: **Second Reading of Ord. 999 and Public Hearing – River Bend Final PUD/ Development Plan and Re-zoning from R2 to PUD-C**

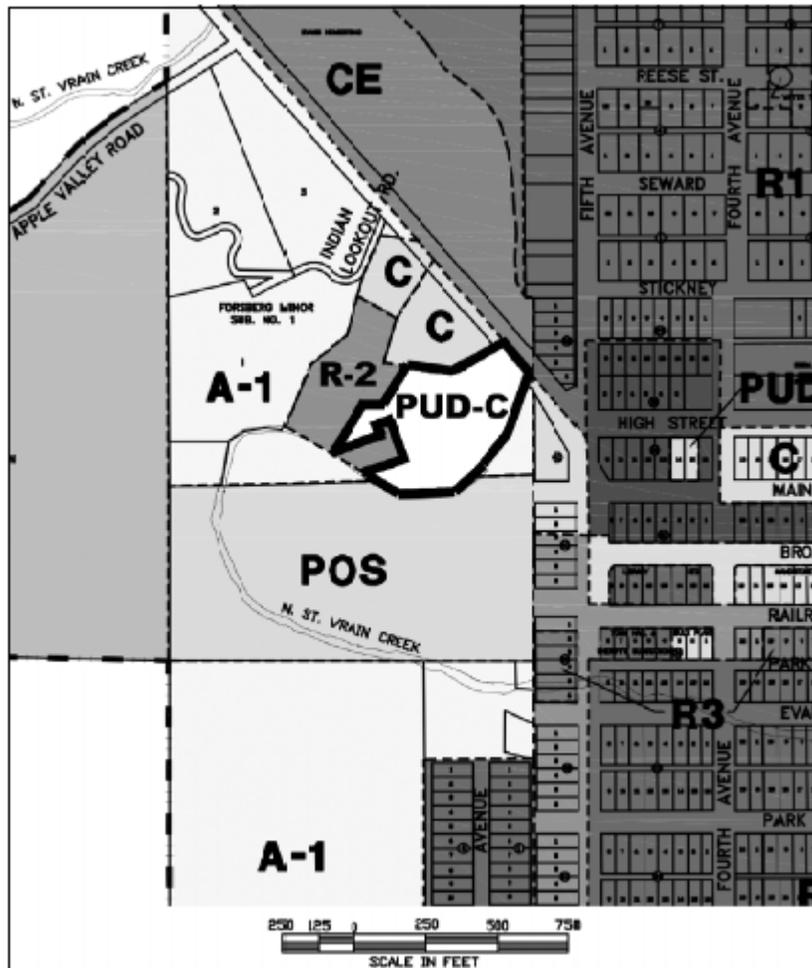
DATE: **4/28/16**

PURPOSE: JM Properties, Inc. (“Applicant”) on behalf of Lyons Properties, LLC (“Owner”) requests approval of a Final PUD Plan and rezoning from R2 to PUD-C to establish permanent facilities for Weddings and other outdoor Special Events along with the use of up to 22 Recreational Vehicles as overnight accommodations for guests. Also occasional use as a tent campground supporting special events at Planet Bluegrass. (see attached statement of intent and Site Plan)

LOCATION: **501 W. Main Lyons Colorado**







APPLICANT: Lyons Properties LLC
 4121 Hwy 66
 PO Box 312
 Lyons, CO 80540

ARCHITECT: Jerry Moore
 JM Associates
 PO Box 18390
 Boulder, Co. 80308

CODE: Lyons Zoning Regulations, Chapter 16

DEPARTMENT: Planning
Bob Joseph, AICP/ASLA
Consulting Town Planner

ACTION: Approve, approve with conditions or deny the Final PUD/Development Proposal and Re-zoning from R2 to PUD-C . *(Note: the BOT is free to add to, revise or delete any of the PCDC recommended conditions of approval).* The Ordinance 999 prepared for consideration on second reading assumes that the BOT will adopt the PCDC’s recommendation to approve the rezoning and approve the Final PUD Plan, subject to the conditions as recommended by PCDC.

Suggested Motion: “I MOVE TO APPROVE ORDINANCE NO. 999, AN ORDINANCE REZONING 501 WEST MAIN STREET, FROM THE R-2 MEDIUM DENSITY ZONE DISTRICT TO THE PUD-C COMMERCIAL PLANNED UNIT DEVELOPMENT DISTRICT. I FURTHER MOVE TO APPROVE THE FINAL PUD PLAN WITH THE CONDITIONS NOTED IN THE STAFF REPORT DATED 4.28.16 AND WITH ACCEPTANCE OF THE FINDINGS NOTED THEREIN.”

Background: The PCDC acted to recommend rezoning of this property from R2 to PUD-C on 3-14-16. The PCDC on 4-11-16 acted to recommend the approval of this Final PUD with conditions as set forth in this staff report.

River Bend Final PUD and Zoning Amendment Staff Report
Table of Contents

I. Staff and PCDC Recommended Action on Final PUD and Zoning Amendment	pg 4
II. Staff and PCDC recommended conditions of approval for Final PUD	pg 5
III. Staff and PCDC Findings re: Zoning Amendment criteria; C-PUD Uses and Site Design Standards and Guidelines	pg 6
IV. Staff Findings re: Comp Plan relationship	pg 18
V. Summary and Background of Subject Matter	pg 18
VI. Summary of Requested Waivers under the PUD process	pg 23
VII. Referral Documents	attached
VIII. Neighbor Comments	attached

I. Staff and PCDC Recommended Action on the Final PUD and zoning amendment.
Staff and PCDC supports this application for Final PUD and recommends approval of this PUD Development Plan along with the PUD-C zoning amendment with conditions as noted under Section II below.

II. Staff and PCDC recommended conditions of approval for Final PUD.

All conditions proposed and presented by the Applicants with this land use request as submitted, both written and graphic, are hereby incorporated into this list of conditions by reference. Some of these conditions are repeated below for emphasis and ease of administration of this land use approval moving forward. Some are amplified, clarified and/or modified below for the final record. Omission from this listing below of conditions that the applicant has proposed elsewhere in the submittal does not negate the binding nature of the PUD submittal taken as a whole with all elements duly noted and accepted with this approval.

1. As noted on Sheet A00, the Applicants have proposed and the PCDC has accepted the following sound limitations.

Event center, small use, shall be subject to the following conditions:

- a. Outdoor music performed by live entertainment at events shall not include amplified instruments. Horns or percussion are not allowed. Woodwinds (e.g clarinets, flutes, etc. are allowed. One vocalist may use a microphone with amplification.
- b. Outdoor Disc Jockey (DJ) style performance of amplified recorded music is not allowed.
- c. Outdoor weddings:
 - i. During wedding ceremonies: the officiant and other members of wedding parties may use a microphone with amplification for readings, vows. Low level amplified recorded music or unamplified acoustic instruments only are allowed during the ceremony with one vocalist using a microphone with amplification. Wedding ceremonies are to be concluded no later than 5:30 pm.
 - ii. During cocktail hour and dinner: unamplified acoustic only instrumental music is allowed. The officiant and other members of wedding parties may use a microphone with amplification for toasts and announcements.
 - iii. After dinner music: unamplified acoustic only instruments are allowed with one vocalist using a microphone with amplification.
- d. All music shall end by 10:00 pm.
- e. Outdoor low level amplified recorded music, vocals, and public address system announcements, or any other noise generated at any wedding or other special event conducted on the property shall be carefully limited to the minimum functional sound level. All uses conducted at River Bend shall also comply with the noise restrictions set forth in Sec. 10-11-10 Unreasonable Noise of the Lyons Municipal Code as it may be amended from time to time. The Applicant or any person or entity holding a function on the subject property shall immediately reduce or eliminate any amplified or other sounds when instructed to do so by a member of the Boulder County Sheriff's Office, other law enforcement or emergency services personnel or member of Town Staff.

2. Limitations on Use. As noted on Sheet A00, the Applicants have proposed and the PCDC has accepted the limitations on use as set forth on Sheet A00. This PUD approval is restricted to the specific uses proposed as set forth on Sheet A00 in items 1 through 14. This PUD approval would require a PUD amendment approved by both the PCDC and BOT to add a use not specifically identified and approved with this review.

3. All public improvements and site design including road surfacing, utilities and drainage shall be subject to a separate plan review including review of the final layout and construction details by the Town Engineer, prior to issuance of a construction permit pursuant to the Final PUD approval.

III. Staff Findings re: Zoning Amendment criteria; C-PUD Uses, Site Design Standards and Guidelines and PUD review standards *(Background only from PCDC review of the re-zoning request)*

Compliance with Town Standards regarding Re-zoning Request:

Staff finds the application in compliance with Chapter 16, Sec. 16-15-40. Official Zoning Map amendment approval criteria, of the Town of Lyons Land Use Code, as outlined below.

For the purpose of establishing and maintaining sound, stable and desirable development within the Town, the official zoning map shall not be amended except:

(1) To correct a manifest error in an ordinance establishing the zoning for a specific property.

Staff Finding: Not Applicable

(2) To rezone an area or extend the boundary of an existing district because of changed or changing conditions in a particular area or in the Town generally.

Staff Finding: The flood of 2013 destroyed the historic mobile home park use on the property. The historic use cannot be re-established because of the flood plain conditions on the property.

(3) The land to be rezoned is inconsistent with the policies and goals of the Comprehensive Plan.

Staff Finding: Not Applicable

(4) The proposed rezoning is necessary to provide land for a municipal-related use that was not anticipated at the time of the adoption of the Comprehensive Plan, and the rezoning will be consistent with the goals and policies of the Comprehensive Plan.

Staff Finding: Not Applicable

(5) The area requested for rezoning has changed or is changing to such a degree that it is in the public interest to encourage development or redevelopment of the area, and the rezoning will be consistent with the goals and policies of the Comprehensive Plan.

Staff Finding: The broad scope of the 2013 flood disaster constitutes a change to a degree that it is in the public interest to encourage development or redevelopment of the area, and the rezoning will be consistent with the goals and policies of the Comprehensive Plan.

(6) A rezoning to a Planned Unit Development overlay district is requested to encourage innovative and creative design and to promote a mix of land uses in the development.

Staff Finding: The proposed mix of land use (i.e. outdoor wedding venue combined with Tiny Home lodging) demonstrates creative mix of uses and design (i.e. handcrafted tiny homes).

River Bend PUD with ZONING AMENDMENT Proposed Uses:

The PUD would allow for construction of a maximum 4,000 sf single story enclosed Pavilion Structure along with associated site improvements which would require development review approval by the Town of Lyons Planning and Community Development Commission and subject to ratification of this approval by the Town of Lyons Board of Trustees prior to building permit submittal. Construction of the Pavilion Structure would result in removal of the Mobile Restroom Trailer from the Property. Should the Pavilion construction be delayed beyond 5 years from the approval date of this PUD, the Applicant agrees to remove the Restroom trailer and replace its functionality with a permanent Restroom Structure as noted on the accompanying Site Plan. The development approval process for construction of the Restroom Structure would require the process noted above for the Pavilion Structure.

Staff Findings Regarding Conformance with C-Commercial zone district uses.

Permitted principal uses in the C-Commercial District include the following *proposed* uses:
See Sec. 16-3-200. C Commercial District.

- (1) Accessory building or use.
- (2) Business use, including but not limited to the following:
 - e. Hotel or motel.
 - n. Recreational facility.
 - o. Restaurant, bar or other eating and drinking place.
 - p. Retail business, such as gift shop

Staff Comment: This PUD site development plan may be amended from time to time to introduce the anticipated future uses that are permitted with this site specific PUD subject to the applicable provisions of Article 17, including but not limited to Site Plan and Development Plan Review Process.

- (3) Residential use as follows:
 - a. Associated residential unit

Uses by PUD Review.

Chapter 16 sets out the following applicable code provisions See Sec. 16-3-340. PUD-C Commercial Planned Unit Development District.

(a) Specific Purpose. The purpose of the PUD-C District is to establish areas for planned commercial centers and grouping of consumer-oriented commercial uses that incorporate high-quality architectural design and to allow development of tracts of land large enough to accommodate well-planned and rational connections between structures, people and automobiles through the use of planned parking access, pedestrian walkways, courtyards, malls and landscaped open space.

(b) *Allowed Uses.* In PUD-C Districts established through initial zoning or through rezoning, the following uses are allowed as appropriate and approved in the PUD Plan:

(1) *Principal permitted, conditional or accessory uses allowed in the C District **unless such specific uses are explicitly omitted in the PUD Plan;***

(2) *Multiple-family dwellings as part of a mixed-use development where the residential use is located in the same building as a principal nonresidential use; and*

(3) *Other uses expressly approved as part of the PUD Plan:*

Uses not listed under C-Commercial, but included under the PUD application and review as provided for under b (3) as noted above.

- Automobile, boat and motorcycle rental and sales. Not listed as a C-Commercial use, but allowed under the PUD review process.
 - *Note: the owners contemplate potential sales of RV's used on site, Staff finds this use fits under this broader heading. Sales shall be strictly limited to the twenty two RV's located on site, and shall be incidental and accessory to the other principal uses approved herewith.*
- Campground. Not listed as a C-Commercial use, but allowed under the PUD review process. Tent camping use shall be restricted to Special Events for a total of three (3) weekend tent camping events per year, each operating on the following schedule: Thu – camper arrival and setup; Fri through Sun – festivating; and, Mon – breakdown, cleanup and camper departure.
- Campground. The use of “Tiny Home” Recreational Vehicles as temporary short-term commercial accommodations open to the general public. This use is not to exceed 22 units as depicted on the site plan.
 - *Note: Staff finds the use of RV's on the site fit under the broader campground heading, as does the overflow special event tent camping.*
- Event Center Small. The wedding venue and other hosted special events are categorized under this use Heading that is not listed as permitted under the C-Commercial district, but may be permitted under the PUD application and review as provided for under b (3) as noted above.

Staff Findings Regarding Conformance with PUD review standards.

Sec. 16-3-340. PUD-C Commercial Planned Unit Development District.

(a) *Specific Purpose.* The purpose of the PUD-C District is to establish areas for planned commercial centers and grouping of consumer-oriented commercial uses that incorporate high-quality architectural design and to allow development of tracts of land large enough to accommodate well-planned and rational connections between structures, people and automobiles through the use of planned parking access, pedestrian walkways, courtyards, malls and landscaped open space.

(b) *Allowed Uses.* In PUD-C Districts established through initial zoning or through rezoning, the following uses are allowed as appropriate and approved in the PUD Plan:

(1) *Principal permitted, conditional or accessory uses allowed in the C District unless such specific uses are explicitly omitted in the PUD Plan;*

(2) Multiple-family dwellings as part of a mixed-use development where the residential use is located in the same building as a principal nonresidential use; and

(3) Other uses expressly approved as part of the PUD Plan.

(c) Density. For PUD-C Districts established through initial zoning or rezoning, density shall be established by the allowed density in the C District (please refer to Section 16-3-200 above) unless varied through the PUD review process. The decision-making body may increase density for any of the amenities described in Section 16-4-200 of this Chapter. (Prior code 9-2-4; Ord. 956 §1, 2014)

Sec. 16-4-160. Standards of general applicability.

The standards contained in Sections 16-4-170 through 16-4-240 below shall apply to all PUD Districts unless otherwise expressly provided. (Prior code 9-2-4; Ord. 956 §1, 2014)

Sec. 16-4-170. Allowed uses.

In PUD Overlay Districts, allowed uses shall be consistent with the underlying zoning district unless varied through the PUD review process. In all other PUD Districts, allowed uses shall be consistent with comparable zoning districts unless varied through the PUD review process. (Prior code 9-2-4; Ord. 956 §1, 2014)

Staff Finding: The campground uses and small event center uses are allowed only as provided for as noted above “unless varied through the PUD review process”

Sec. 16-4-180. Minimum lot size.

In PUD Overlay Districts, minimum lot size shall be consistent with the underlying zoning district unless varied through the PUD review process. In all other PUD Districts, minimum size shall be consistent with comparable zoning districts unless varied through the PUD review process. (Prior code 9-2-4; Ord. 956 §1, 2014)

Staff Finding: The subject property is compliant with the C-Commercial district minimum lot size.

Sec. 16-4-190. Common open space.

(a) Minimum Requirements. Except for PUDs or PUD Overlay Districts located in the neighborhoods identified in the Lyons Comprehensive Plan as the Downtown Commercial Area and East Entry Corridor, all PUD Plans shall provide common open space unless varied through the PUD review process.

Staff Finding: The Common Open Space requirement must be varied through the PUD review process.

Staff Finding: The proposed PUD plan offers substantial private open space with related natural landscape character retained and is therefore substantially compliant with the intent of the Open Space standards of the code.

(b) Compliance With Other Open Space Standards. All common open space in the PUD Districts shall comply with the standards stated in this Code (including applicable public park reservation, dedication or in-lieu fee requirements) unless varied through the PUD review process. (Prior code 9-2-4; Ord. 956 §1, 2014)

Staff Finding: The Common Open Space requirement must be varied through the PUD review process.

Staff Finding: The proposed PUD plan offers substantial private open space with related natural landscape character retained and is therefore substantially compliant with the intent of the Open Space standards of the code.

Sec. 16-4-200. Bonus density.

Staff Finding: Not Applicable, no bonus density is proposed.

Sec. 16-4-210. Clustering.

Where appropriate, clustering of dwelling units, commercial uses and industrial uses is strongly encouraged, provided that buffers, common open space and emergency access are adequate. Buffers are required to separate different uses in order to eliminate or minimize potential interference and nuisances on adjacent properties. The size of the buffer shall be determined through the PUD review process, based on its ability to achieve appropriate separation. (Prior code 9-2-4; Ord. 956 §1, 2014)

Staff Finding: The Tiny Home layout demonstrates a clustered layout.

Sec. 16-4-220. Protection of significant scenic views.

To the maximum extent feasible, the PUD District shall be sited to allow identified significant scenic views across and through the development parcel, as viewed from adjacent public rights-of-way, including trails, and from public open space or parks. (Prior code 9-2-4; Ord. 956 §1, 2014)

Staff Finding: Existing scenic views are retained with little or no negative impact.

Sec. 16-4-230. Setbacks.

In PUD Overlay Districts, setbacks shall be consistent with the underlying zoning district unless varied through the PUD review process. In all other PUD Districts, setbacks shall be consistent with comparable zoning districts unless varied through the PUD review process. (Prior code 9-2-4; Ord. 956 §1, 2014)

(d) Development Standards. Development standards in the C District shall be as follows:

(2) Minimum setbacks:

- a. Front yard – twenty-five (25) feet.
- b. Side yard – ~~zero (0) feet.~~ Ten feet (10ft.) (PUD)
- c. Rear yard – twenty-five (25) feet.

~~d. When abutting any A, E, R-1, R-2, R-2A or R-3 District, the yard between the zone district boundary and any building shall not be less than three (3) times the height of the proposed building.~~ This standard is requested to be varied through the PUD process and replaced with a 10 ft. side yard

Staff Finding: Set Backs are substantially compliant with C-Commercial standards or are otherwise varied through the PUD review process as provided for above for temporary food catering tent.

Sec. 16-4-240. Development standards.

(a) Circulation and Pedestrian Linkage. All PUD Plans shall comply with the circulation, access and pedestrian linkage standards stated in this Code, and the decision-making body may modify or vary such provisions in any way, provided that adequate compensating mitigation measures are included in the PUD Plan.

Staff Finding: The internal pedestrian connections are informal and lack definition. However, this is mitigated adequately in view of the very minor amount of conflicting vehicular traffic and absence topographic barriers or other natural or manmade barriers to pedestrian connectivity.

(b) Adequate Public Facilities. All PUD Plans shall comply with the adequate public facilities standards stated in this Code, unless varied through the PUD review process.

Staff Finding: Adequate Water, Sanitary Sewer and Electric service is proposed.

(c) Water Share Requirements. The PUD Plan shall meet the Town's water share requirements for additional water service.

Staff Finding: Not Applicable.

(d) Design Standards. All PUD Plans shall comply with the applicable residential and nonresidential design standards stated in this Code, unless varied through the PUD review process.

Staff Finding: The following non-residential design standards are requested to be waived through this PUD process:

This PUD-C zone district review includes waivers from the Town of Lyons development standards as follows:

1. Access roads must be designed and installed to support the fire protection apparatus equipment requirements of the International Fire Code and the Lyons Fire Protection District. A study prepared by a licensed Geotechnical Engineer must be submitted presenting the required preparation of sub-grades, pavement type and pavement thickness for any fire department and town access road. All roads must have an all weather surface and be designed for maintaining water runoff quality and air quality. It is the Applicant's intent to maintain the historic rural park-like character of the Site. The Applicant requests a waiver of the Town's requirement for hard paving of roads and parking areas, subject to the Town Engineer's review and approval of the specifications and engineering design for proposed drainage, water quality control and paving on the Site.

2. All existing outdoor lighting fixtures that are not cut-off / downcast shielded luminaires shall be immediately replaced with code compliant shielded fixtures, excepting light bulb strings used for minimal decorative, safety and security lighting in event production and camping areas. All new outdoor lighting fixtures shall be cut-off / downcast shielded luminaires.

(e) Signs. Signs are subject to the sign regulations of this Chapter unless varied through the PUD review process.

Staff Finding: Existing signs conform to the Lyons Sign Code regulations.

(f) Parking. PUD Plans shall be subject to the off-street parking and loading standards of this Code unless varied through the PUD review process.

Staff Finding: (See (d) above regarding pavement) The proposed number of parking spaces is adequate.

Modification. The design of public streets within a PUD District shall comply with all applicable Town standards.

Staff Finding: Not Applicable, no public streets are proposed.

(h) All Other Zoning and Development Standards and Modifications.

Staff Findings: See Compliance with C-Commercial, Commercial and Mixed Use Standards and Guidelines. Development Plan Review (below)

(1) Modification allowed. Unless otherwise expressly limited by this Section, the decision-making body may allow modification of all other applicable zoning district, general development and subdivision standards within a PUD District.

(2) Applicability continues if no waiver. Except where this Article states a specific standard or the decision-making body modifies an otherwise applicable standard, all development in a PUD District shall comply with all applicable standards of this Code.

(i) Development Assurances. The decision-making body may require adequate assurance, in a form and manner that it approves, that the common open space, amenities and public improvements shown in the Final PUD Plan will be provided and fully developed. (Prior code 9-2-4; Ord. 956 §1, 2014)

Compliance with C-Commercial, Commercial and Mixed Use Standards and Guidelines.

Development Plan Review:

Note: Where code standards are not listed in this portion of the report the Staff has found that they are not applicable.

Redevelopment. Redevelopment of nonconforming buildings and sites may not be strictly held to total compliance with all relevant design standards unless the site is being leveled clean. Instead, proportionality should be established between the physical and economic scope of the proposed redevelopment project and the scope of compliance with the relevant standards to be required and enforced. Substantial progress toward compliance shall be required as it relates to the specific re-constructed elements of redevelopment. Where redevelopment calls for reconstruction of existing buildings, portions of existing buildings, existing site improvements or portions of existing site

improvements, then corresponding conformance with the applicable standards shall be required for only the reconstructed elements to the degree possible, given the need to maintain the utility and functional integration of the remaining nonconforming buildings and site improvements. No new nonconformities shall be allowed to be created unless approved through a variance process or through a waiver granted as provided for herein as part of a development plan review or site plan review.

Sec. 16-6-20. Site planning and design.

(a) Environmental Conservation. Intent: New development should be designed to fit within the natural environment in a compatible and integrated manner. To the greatest extent feasible, sites should be designed to preserve floodplains, steep slopes, natural landforms and significant vegetative communities and the wildlife inhabiting those areas. New development and redevelopment should also be designed to fit within the existing fabric of the built environment in a compatible manner wherever the existing built environment is recognized as being worthy of preservation as a valued part of the neighborhood. *Staff finding: Compliance*

(1) Inventory the property's natural characteristics (e.g., important view sheds, soils, topography, hydrology, vegetation) prior to the site design so that the physical features and views become an integral part of the development. New development should: a) respect existing drainage patterns and minimize grading and impervious coverage (buildings, parking lots, roads, etc.); b) work with the Colorado Division of Wildlife and Town-approved ecologists to design projects to minimize potential impacts and conflicts with wildlife; and c) ensure that development minimizes environmental impacts, mitigates impacts to wildlife and wildlife habitat and promotes building practices which benefit the environment and the well-being of current and future residents of the Town. *Staff finding: Compliance*

(2) Standards and guidelines:

a. In the event significant natural resources, including important view sheds, are found to exist on the development site, they shall be adequately protected and integrated into the new development. Resources to be protected include streams, rivers and associated wetland and riparian vegetation, significant stands of healthy mature trees and shrubs, distinctive natural land forms and prominent views to these resources from public spaces. Important view sheds to be protected include views from public streets, parks and gathering spaces to Steamboat Mountain and other prominent ridgelines, views to the St. Vrain River and its primary tributaries and views of landmark historic buildings. Views to be protected may be identified with duly adopted maps and other graphics. (G) *Staff finding: Compliance*

b. In the event significant natural systems and/or resources are expected to be negatively impacted and compromised by development, it shall be the applicant's responsibility to demonstrate adequate mitigation of the negative impacts. Where important view sheds may be impacted by new development, it shall be the applicant's responsibility to submit visual simulations of the potential visual impact of the development on the view shed. (G) *Staff Finding: no significant negative impact.*

c. Identify the natural resources on a site and show how they are integrated into the overall design for the project and the neighborhood. (G) *Staff finding: Compliance*

(b) Riparian Area Protection. (This Section is reserved.) *Staff Finding: no significant negative impact.*

(c) Site Grading, Site Disturbance Limitations. Intent: New development should be designed to fit within the natural environment in a compatible and integrated manner. The design of site improvements should

minimize cut-and-fill in order to preserve each site's natural terrain to the maximum extent possible.

Staff finding: Compliance

(1) To the greatest extent feasible, sites should be designed to preserve floodplains, steep slopes, natural landforms, significant vegetative communities and riparian areas and the wildlife inhabiting those areas. New development and redevelopment should also be designed to fit within the existing fabric of the built environment in a compatible manner wherever the existing built environment is recognized as being worthy of preservation as a valued part of the neighborhood. *Staff finding: Compliance*

(2) Where significant natural resources and systems are found, site disturbance of these resources and systems shall be minimized to the maximum extent feasible, through careful site planning and creative design, including but not limited to design of buildings, parking lots, drives and other site improvements to fit into the natural terrain with minimal site grading and site disturbance. The burden is on the applicant to demonstrate the suitability of the development site for the type, size, scale and scope of the development proposed, regardless of the use and maximum site coverage allowances provided in the underlying zoning district. *Staff finding: Compliance*

(3) Steep slope protection standards and guidelines:

a. Steep slope defined. A steep slope shall include any land area greater than two hundred fifty (250) square feet with an average slope greater than twenty-five percent (25%). (S) *Staff finding: Compliance*

b. Identification of steep slopes required. Any application for development shall graphically identify all steep slopes on the property. (S) *Staff finding: Compliance*

c. Steep slope mitigation and reduction of impact. Site design shall avoid the location of any development or improvement within an area of a steep slope. Where such location of development or improvement cannot otherwise be reasonably avoided, the following mitigation measures shall be required: (S) *Staff finding: Compliance*

(4) Grading standards and guidelines:

a. In developing sites, limit slopes to 3:1 or less. Slopes in excess of 3:1 may be allowed when engineering or site constraints dictate a steeper slope, provided that adequate vegetative cover is established to prevent erosion. (G) *Staff finding: Compliance*

b. Avoid grade changes within the drip-line of existing trees that are to be maintained. (G) *Staff finding: Compliance*

d. Protect existing site vegetation, to the extent possible, during grading and construction activities. (G) *Staff finding: Compliance*

g. Limits on changing natural grade. The original, natural grade of a lot shall not be raised or lowered more than ten (10) feet at any point for construction of any structure or improvement (S), except for foundation walls incorporated into the principal structure to allow for walk-out basements; or the site's original grade may be raised or lowered a maximum of twelve (12) feet if a retaining wall or terracing is used to reduce the steepness of man-made slopes, provided that the retaining wall or terracing comply with the requirements set forth in this Section. *Staff finding: Compliance*

h. Limits on graded or filled man-made slopes. Except as provided below, graded or filled man-made slopes shall not exceed a slope of fifty percent (50%) (a 2:1 slope) unless a soils engineering or a geotechnical report is furnished stating that the site has been investigated and that, in the opinion of the qualified professional, a cut at a steeper slope will be stable and not create a hazard. (S) *Staff finding: Compliance*

(f) Parking Location and Setbacks. Intent: Setbacks should provide a well-landscaped and pedestrian-friendly character along major streets which promotes a comfortable walkable environment. To attain this objective, all buildings and parking should be set back from perimeter and interior streets a sufficient distance to create a distinct landscape zone between buildings, parking, and adjacent roadways. Varying building setbacks to enhance visual interest along the streetscape is strongly encouraged. *Staff finding: Compliance*

(d) Dimensional Standards. Dimensional standards in the C- District. *Staff Finding: Compliance.*

Sec. 16-6-30. Vehicular circulation, access and parking.

Intent. The on-site vehicular circulation and parking system is a critical factor in the safety and success of a new development. The parking/access/circulation system should provide for the safe, efficient, convenient and functional movement of multiple modes of transportation both on and off the site. Pedestrian/bicycle/vehicle conflicts should be minimized. Alternate modes of transportation, including public transit, golf carts, bicycles and pedestrians, should be given priority in the site design.

Standards and Guidelines:

a. Enhance the intersections of entrance drives with arterial and collector streets by incorporating signs, accent paving, special landscaping and lighting. Materials used in entry features should be consistent with the materials used elsewhere in the development. *(G) Staff comment: the sign and landscaping are consistent with the overall site character.*

b. The maximum width of any single point of two-way site access shall be limited to thirty- five (35) feet. Where access width is proposed to exceed twenty-eight (28) feet, the necessity of greater width must be demonstrated based on expected oversized vehicle turning requirements. The maximum width of any single point of one-way site access shall be limited to fourteen (14) feet. (S) *Staff finding: Compliance*

c. Locate site access points as far as possible from street intersections to provide adequate vehicle stacking room. (G) *Staff finding: Compliance*

d. More than one (1) access to a site may be permitted when it will not be hazardous to the safety and operation of the street or to pedestrians. (G) *Staff finding: Compliance*

e. Maintain a minimum of fifty (50) feet of separation between adjacent curb cuts along private roadways. (S) *Staff finding: Compliance*

f. Maintain a minimum of thirty (30) feet of separation between a public or private road intersection and a parcel curb cut. (S) *Staff finding: Compliance*

i. Entrances should be free from backing movements that would interfere with site ingress. *Staff finding: Compliance*

j. Entrances that lead directly into head-in parking are discouraged. (G) *Staff finding: Compliance*

- l. Intersections of streets shall be made at approximately right angles unless topographical or physical features prevent such an alignment. (S) *Staff finding: Compliance*
- m. Not more than two (2) streets shall intersect at any one (1) point. (S) *Staff finding: Compliance*
- o. Streets and drives shall be leveled, whenever possible, to a grade of four percent (4%) or less for a distance of at least forty (40) feet for drives and seventy-five (75) feet for streets when approaching intersections. (S) *Staff comment: The existing entry is steeper than 4% but is serviceable given the use and the fact that this is a site is re-developing.*
- p. Access to a state highway shall occur only at intersections approved by the Colorado Department of Transportation in consultation with the Town Engineer. (S) *Staff finding: Compliance*

Standards and Guidelines:

- a. Link developments with surrounding areas and uses by extending streets, drives and sidewalks directly into and across the development and across property lines, thereby providing convenient, direct pedestrian, bicycle and vehicular access to adjoining development. (G) *Staff Finding: Non-Compliance*
- b. Provide separate vehicular and pedestrian circulation systems with a strong definition of pedestrian linkages between uses. (S) *Staff Finding: Non-Compliance*
- c. All streets, drives and alleys shall be constructed and paved in accordance with the applicable Manual of Design Criteria and Standard Specifications for the Construction of Public Improvements of the Town of Lyons (DCS) and other construction standards adopted for the Town. (S)
Staff Finding: Non-Compliance
- d. All streets and associated curbs, gutters and sidewalks shall be designed and constructed to allow for the safe and convenient movement of handicapped individuals and shall meet all federal and state requirements and standards for accessibility. (S) *Staff Finding: Non-Compliance*
- j. One-way access ways require a minimum twelve-foot-wide driveway, a minimum fifteen-foot radius intersection. (S) *Staff finding: Compliance*

Sec. 16-6-50. Architectural design. *Staff Finding: Tiny Home RV's are compliant, otherwise Not Applicable to the first phase. Further review of future permanent buildings in future phases will entail a full review of the architectural design of those buildings.*

Sec. 16-6-60. Landscape design. *Staff Finding: Compliance with intent as listed below, except for interior*

Parking Lot Landscaping.

(a) Intent. Design new development to complement and enhance the natural beauty of the Town and to preserve its environmental quality. The site plan and landscape plan should be coordinated to achieve the following objectives:

- (1) Enhance the aesthetics of new developments;
- (2) Create a pedestrian-friendly environment;
- (3) Break up the mass of buildings;
- (4) Soften architectural materials;
- (5) Provide screening of service structures;
- (6) Provide tree-lined streets;
- (7) Define building and parking lot entrances;
- (8) Provide shade in parking lots;
- (9) Consider wildlife habitat;
- (10) Provide buffers between incompatible uses;
- (11) Reduce water use by using native plants and Xeriscape design techniques;
- (12) Maximize rainwater retention and infiltration;
- (13) Integrate natural features and significant existing trees and native vegetation into new development and maximize their interconnectivity within the site; and
- (14) Local food production and community gardens are allowed and count towards green space.

(b) Perimeter Landscaping Adjacent to Public Streets. Intent: Landscape improvements in new development shall create an attractive streetscape with an appropriate mix of street trees, shrubs and hardy ground covers. *Staff Finding: Compliance*

Existing Vegetation. Intent: Special attention should be paid to preserving, within each new development, those natural features and vegetation which are significant. **To the maximum extent feasible, the landscape requirements set forth herein shall be met through the retention of existing healthy trees, shrubs and ground cover.** *Staff finding: compliance with the landscape standards are met entirely through retention of existing trees, shrubs, and vegetative ground cover.*

(d) Parking Lot Landscaping. Intent: Parking lots are necessary features of building sites that can, if not designed properly, visually detract from the overall development character. Parking lots should be designed to blend with each building site's character, using landscape plantings and coordinated site design elements. Significant shade should be provided within and around the parking lot.

(d) Parking Lot Landscaping. Intent: Parking lots are necessary features of building sites that can, if not designed properly, visually detract from the overall development character. Parking lots should be designed to blend with each building site's character, using landscape plantings and coordinated site design elements. Significant shade should be provided within and around the parking lot.

Staff Finding: West edge of parking is shaded, interior plantings exist but are not fully compliant.

Sec. 16-6-70. Freestanding walls and fences.

(a) Intent. Fences and walls should be decorative and contribute to the visual quality of the project and the overall development. Walls, fences and landscape materials shall be used to screen service areas, loading areas and outdoor storage or sales areas. When not required for security, screening or grade transitions, the size of walls and fences should be minimized. When required, however, fencing should be as inconspicuous as possible, and walls should be low.

(b) Freestanding Walls and Fence Design and Materials. Intent: Fencing and walls shall be constructed of materials that are compatible with the adjacent building architecture and their appearance softened with plantings.

Standards and Guidelines: ¹

(1) Preferred fencing materials:

Traditional fence designs using wood in its natural color and texture. *Staff Finding: Compliant*

Sec. 16-6-80. Exterior site lighting.

(a) Intent. Exterior lighting should be used to provide illumination for the security and safety of entry drives, parking, service and loading areas, pathways, courtyards and plazas, without intruding on adjacent properties. Lighting that spills beyond the intended target of illumination, whether into the night sky or onto adjacent properties, is considered light pollution and is prohibited. Lighting used to accent architectural features, landscaping or art may be directed upward, provided that the fixture shall be located, aimed or shielded to minimize light spill into the night sky. The use of sensor technologies, timers or other means to activate lighting during times when it will be needed is encouraged to conserve energy, provide safety and promote compatibility between different land uses. Lower lighting levels after closing are encouraged.

(2) The light source shall be concealed or otherwise shielded so that the light source is not visible from any street right-of-way or adjacent properties. In order to direct light downward and minimize the amount of light spill into the night sky and onto adjacent properties, all lighting fixtures shall be full cutoff fixtures. *(S) Staff comment: If any existing fixtures do not comply they should be replaced, any new fixtures must be compliant.*

IV. Staff Findings Regarding Comprehensive Plan Relationship:

Economic Sustainability

- Provide enough revenue for Town government to provide the quantity, type and quality of services desired by residents and businesses.
- Promote a business-friendly environment that encourages commercial and job growth according to community members' vision and desires.
- Transition from a residential-development based economy to a commercial-based, localized economy.
- Reduce retail leakage and attract Front Range day-trip tourists to support the local economy.

Economic Development Objective 1.3: Promote business retention and the creation of new businesses in Lyons.
Economic Development Strategy 1.3.1: Support efforts to encourage entrepreneurship and to nurture businesses throughout the Lyons Planning Area.

Economic Development Objective 1.4: Enhance the community's appearance.

ECONOMIC DEVELOPMENT GOAL 2: Leverage the Town's history, natural setting, unique retailers and relationship with the music and arts community to attract tourists.

Economic Development Objective 2.1: Increase Lyons' brand awareness and recognition.

Economic Development Objective 2.2: Make Lyons a retail and recreational destination for residents and visitors.

Economic Development Strategy 2.2.1: Focus on encouraging the development of lodging facilities.

Economic Development Strategy 2.2.4: Form a St. Vrain River Task Force to devise a master plan for the river corridor. The plan should balance how to:

- Make the river more visible and connected to key local and regional destinations and leverage development opportunities along the river;
- Improve recreational opportunities;
- Maintain the health of the riparian corridor and enhance wildlife habitat; and
- Achieve sustainability goals.

ENVIRONMENT GOAL: Protect and promote Lyons' unique natural environment and resources and lead the community towards environmental sustainability.

Staff Finding: the proposed development and use of River Bend will significantly advance the Economic Sustainability goals and objectives listed above.

Trails. *(see memo from Parks Director Dave Cosgrove attached in VII. Referral Documents)*

V. SUMMARY AND BACKGROUND OF SUBJECT MATTER

Background Information and PUD Intent:

1. For over 30 years the 501 W. Main property has been identified as "River Bend Mobile Home Park" and provided housing for as many as 33 residents of mobile homes and manufactured housing. Lyons Properties LLC acquired "River Bend" in 2006 and managed the mobile home park until it was destroyed in the September 2013 flooding of the North St. Vrain River. The original residential dwelling on 501 W. Main survived the flooding with no substantial damage. Other accessory structures and improvements (well house, pump house, etc.) remain useable following the post-flood cleanup of the property and partial restoration of the grounds. In 2014 the Town of Lyons issued a temporary special use permit to allow for use of these properties as a venue for

hosted events including weddings, community gatherings, fund raising efforts, etc. This special use permit has been extended and currently expires in September of 2016.

2. Effective January 12, 2016, The Town of Lyons and Lyons Properties LLC entered into a Memorandum of Agreement (MOA) which addresses: construction of municipal water and sanitary sewer service improvements through to and through the Subject Property including corresponding easements; construction of improvements in the North St. Vrain channel along including corresponding easements; coordination and correction of property boundaries shared by the Parties; and, clarification of Town of Lyons water and sewer taps related to properties owned by Lyons Properties LLC.

Proposed Use and Development

1. Current and Near Term (0-5 years)

Please refer to accompanying Drawing Sheet A02 – Site Plan for identification and location of existing and proposed new improvements on the subject property.

(a) Event hosting on the Subject Property is supervised and produced by Lyons Farmette LLC, an experienced and active local business, which, along with their approved subcontractors, practice and promote “green” business operations for all hosted events. The existing and proposed onsite event hosting facilities are as follows:

- i. The seasonally erected Canopy Tent provides shelter from sun and rain for hosted event ceremonial seating and catered dining;
- ii. The Glamping Tent provides a private dressing and lounge area for bridal parties;
- iii. The Mobile Toilet Trailer currently provides sanitation facilities in support of all hosted events.
- iv. The Stone Patio provides a hard surfaced gathering area for entertainment and dancing associated with hosted events.
- v. The Fire Pit area is turf surfaced and available for casual recreation and gathering;
- vi. The proposed Pavilion is a covered and enclosed 4,000 sf structure for use in inclement weather and as an indoor venue for amplified music performance. The necessity of this facility will be determined during the 2016 and 2017 seasons based on success of booking weddings and other events subject to limitations on amplified outdoor music. The exact location and exterior character of the structure will be reviewed and approved by PCDC prior to building permit submittal.
- vii. The following list of hosted events is representative of recent activity in 2014 and 2015 and anticipated activity in 2016 and beyond:
 - (1) Approximately 60 weddings with an average attendance of 150 guests and 80 vehicles are scheduled from mid May through mid October on Thursday (infrequently), Friday, Saturday and Sunday;

(2) Charitable fundraising events including: the Lyons Community Foundation Dinner and Fundraiser, Art Show benefiting the Lyons Arts and Humanities Commission (LAHC) and the Boulder County Arts Alliance (BCAA), "CAN' Aid" event sponsored by Oskar Blues; Colorado Haiti Project; and, Earthquake Recovery Benefit for Sengma, Nepal;

(3) The Boulder Community Foundation "Founders" appreciation and cocktail party event;

(4) "Luna Fest" women's bike ride and dinner; and,

(5) Several mid-week corporate retreats for local and regional businesses.

(b) Wee Casa LLC is a Lyons based business which offers "Tiny Homes" available for short term lodging at River Bend. The Tiny Homes are registered with the State of Colorado as recreational vehicles (RVs) and arranged as a campground village. In 2015, Wee Casa put 11 Tiny Homes into service on the Site (10 as lodging units and 1 as an office unit). Wee Casa is currently working to extend the "Lyons Days" of wedding participants and attendees of other Lyons based events scheduled in 2016 with the addition of 10 lodging units. Wee Casa also plans to support local manufacture and sale of Tiny Homes and provide a showcase for Tiny House lifestyles, cutting edge building design and construction techniques. As an active participant in the Tiny Home Movement, Wee Casa will encourage and attract enthusiasts of Tiny Homes to experience all that the Lyons community has to offer.

(c) During Rockygrass and Folks Festival the River Bend grounds are supervised and managed by Planet Bluegrass to provide tent camping (up to 700 people) and temporary car parking (up to 300 vehicles) as an adjunct to offsite camping and parking provided elsewhere in the Town. This was undertaken for the first time in 2014 and welcomed since with rave reviews from participants who appreciated the convenient proximity of River Bend to both the Planet Bluegrass festival grounds and Downtown Lyons. Patrons also appreciated the convenient (and safe) crossing of Highway 36 afforded by the existing supervised pedestrian walkway near the River Bend entrance. Additional temporary toilet facilities are provided by Planet Bluegrass at River Bend during the festivals. Shower facilities for River Bend campers remain available on the Planet Bluegrass festival grounds.

(d) The existing Residence on 501 W. Main will remain in use as a single family residence.

(e) The Utility Building houses the primary irrigation system pump and controls along with providing storage for facility maintenance tools and materials.

2. Longer Term (5-15 years)

The Applicant intends on developing a boutique hotel on the subject property which would include: approximately 50 guest lodging rooms, associated residential condominiums, membership based recreation and fitness facilities, restaurant, and ancillary guest convenience retail shopping. We've begun positive

discussion with consultants experienced in development and management of hospitality projects of this nature. The ultimate scope and timing of this development would be dependent on the success of our initial offering of Tiny Home lodging on the property and the future economic climate. Any development of this scale would occur in coordination and compliance with the community development process and standards of the Town of Lyons.

PROJECT PHASING

Construction of Phase 1 of the Project will commence immediately upon approval of this PUD with Zoning Amendment. We anticipate completion of Phase 1 improvements by mid May 2016, however if the final approval of the PUD occurs after May 1, 2016, completion of Phase 1 improvements may be delayed until November 30, 2016. We anticipate completion of Phase 2 improvements by mid May 2017, however, completion of this phase is subject to availability of water and sewer service from the Town of Lyons (see UTILITIES below). Phase 3 (Pavilion or Restroom Structure) timing would be based on necessity but would occur no sooner than mid May 2018. Please refer to Sheet A02 of this submittal for an outline of proposed improvements by Phase.

Staff note: A similar land use proposal for Riverbend requesting a CEC-Commercial East Corridor zoning amendment was submitted for review in 2015. That proposal was denied by the BOT with concerns expressed by the Trustees that the full range of uses available in the CEC district was potentially not compatible with the River Bend neighborhood setting. This 2016 proposal involves fewer parcels and proposes a more limited range of potential future uses under the PUD process. This 2016 proposal is not a continuation of the 2015 land use request. This is a new review on a new land use request that will rest solely on a new record created in 2016.

Existing Conditions:

Existing Zoning: R2
 Existing Use: Wedding and Special events, campground, single family residential, (under temporary use approval).
 Total Land Area: 5.6 Acres (approx.)
 Total Parcels: One

Adjacent Land-Use/Zoning:

	ZONING	LAND USE
NORTH	C-Commercial	Automotive / Commercial w/ accessory residential
SOUTH	POS-Parks/Open Space	Public Park
EAST	CE Commercial Entertainment A-1 Agricultural	Planet Blue Grass And Single Family Residential
WEST	A-1 Agricultural R-2	R2 Residential and Large lot Single Family Residential

Proposed Zoning: C – Commercial PUD

PROJECT STATISTICS

	Photo	Status	Proposed Use	Flr Area	Parking				Ftprint	Ht	Setback [1]	BR	D.U.	Seats
					Req	Std	HC	Van						
501 West Main				sf					sf	ft	ft			
Primary Dwelling	A	Existing	Single Family Res	1,140	2	3			1,423	20	103	2	1	
Pump House		Existing	Storage	10	0				10	5	49			
Service Bldg	B	Existing	Storage	562	0				562	9	46			
Canopy Tent	C	Proposed	Event Production	2,056	[4]	30	59	2	1	2,056	24	140		[3] 180
Glamping Tent	D	Proposed	Event Production	160		0				160	12	180		
Catering Tent	E	Proposed	Event Production	320	[5]	5	8			320	18	5		
Restroom Trailer	F	Proposed	Event Production	167		0				167	10	25		
Pavilion (Future)		Proposed	Event Production	4,000	[3]					4,000	32	60		[3]
Tiny Homes (21)	G/H	Proposed	Accommodations	4,200	21	20	1			2,400	13	25	21	21
Tiny Homes Office		Proposed	Office	200	1	1				200	13	15		
Property TOTAL				12,815	59	90	3	1	11,298			23	22	180
Net developable land area per potential guest room: 245,926/23 = 10,694 sf														
Note:	[1] Setbacks are measured from point of structure nearest to an external property line.													
	[2] Owner requests allowing residential use to continue in these structures until converted to lodging													
	[3] Canopy Tent and Pavilion would not be occupied simultaneously													
	[4] Required parking based on Institutional, Church, Club use: 1 space per 6 seats													
	[5] Required parking based on 1 space per staff member													

SITE COVERAGE DATA

	Footprint	Paving		Landscape		River	Lot Subtotal
		Impervious	Permeable	Turf	Native		
501 West Main	11,298	3,949	49,479	143,789	32,760	15,651	245,926
SUBTOTAL	11,298	3,949	49,479	143,789	32,760	15,651	245,926
<i>Coverage Ratios</i>	4.59%	1.61%	20.12%	58.47%	13.32%	6.36%	100.00%
SITE TOTAL							5.646 Ac

	Photo	Status	Proposed Use	Flr Area	Parking			Ftprint	Ht	Setback [1]	BR	D.U.	Seats
					sf	Std	HC						
501 West Main				sf				sf	ft	ft			
Primary Dwelling	A	Existing	Acc Dwelling [2]	1,140	3			1,423	20	103	2	1	
Pump House		Existing	Storage	10				10	5	49			
Service Bldg	B	Existing	Storage	562				562	9	46			
Pavilion Tent	C	Proposed	Event Production	2,056	59	2		2,056	24	140			150
Glamping Tent	D	Proposed	Event Production	160				160	12	183			
Catering Tent	E	Proposed	Event Production	320	7			320	18	165			
Restroom Trailer	F	Proposed	Event Production	167				167	10	211			
Tiny Homes (20)	G/H	Proposed	Accommodations	4,000	19	1		2,400	13	25	20	20	
Tiny Homes Office		Proposed	Office	200				200	13	15			
LOT SUBTOTAL				8,615	88	3	7,298				22	21	150
Net developable land area per potential guest room: 208,271/22 = 9,466 sf													

The proposed PUD-C district would incorporate the following dimensional standards:

1. Minimum setbacks:
 - a. Front yard - twenty-five (25) feet
 - b. Side yard - ten (10) feet
 - c. Rear yard – twenty-five (25) feet

Note: The setbacks as noted above would govern over the standard provisions of the C-commercial district including 3 x building height against residential zones.

PROJECT PHASING

Construction of the Project will commence immediately upon approval of this Zoning Amendment and Special Use Review. The owners anticipate completion of Phase 1 improvements by the end of 2015. The owners

anticipate completion of Phase 2 improvements by mid-May of 2016, however, completion of this phase is subject to availability of new water and sewer service from the Town of Lyons. Please refer to Sheet A02 of this submittal for an outline of proposed improvements by Phase.

UTILITIES

501 W. Main is currently served by municipal sewer service with private lift stations that eject via 4" lines to the pressurized main running parallel to the west side of Highway 36. As part of the proposed improvements, and in cooperation with the Town's redevelopment of Meadow Park, the owners plan to connect to a new gravity flow main extending through Meadow Park and crossing the North St.

Vrain onto the property. In addition to allowing abandonment of the lift stations, further extension of this main could potentially serve neighboring properties that front Highway 36. The 2013 flood wiped out water infrastructure on the property and the owners currently rely on treated well water for irrigation and potable water. The owner's recently supplemented these with a private "delivered" water system with onsite tanks and pressurization that's adequate but not ideal. The applicants are aware and supportive of the Town's interest in looping a new water main or transmission line through the property and, the owners will install a new tap for potable water service to the entire property. Irrigation will remain well fed. Natural gas currently serves the Property and no expansion is required. Onsite electrical service can adequately serve the Phase 1 addition of 10 Tiny Homes. Phase 2 may require increasing the size of one of the existing adjacent transformers on the site.

VI. Summary of Requested Waivers under the PUD review

1. Paving of internal vehicular drives and pedestrian walkways. The Applicant requests a waiver of the Town's requirement for hard paving of roads and parking areas, subject to the Town Engineer's review and approval of the specifications and engineering design for proposed drainage, water quality control and alternative surfacing on the Site.
2. Parking lot pavement and interior landscaping.
3. Provide Street frontage side walk.
4. Defined separation of internal pedestrian and vehicular circulation.
5. Downcast lighting. The applicant requests an exception for light bulb strings used for minimal decorative, safety and security lighting in event production and camping areas.
6. 4% slope approach on main entry road is required. (Existing approach to be retained is 7.7%)
7. When abutting any A, E, R-1, R-2, R-2A or R-3 District, the yard between the zone district boundary and any building shall not be less than three (3) times the height of the proposed building. This standard is requested to be varied through the PUD process and replaced with a 10 ft. side yard.

VII. Referral Documents; see following attachments to this report:

-  1 - Checklist Riverbend Drainage Study 1st Review-April 6 2016
-  1 - Drainge Report Comments River Bend Prelim Submittal April 6 2016
-  1 - River Bend PUD - Drainage Report - 033116-Town Comments April 6, 2016 Final 1
-  1 - River Bend PUD - Drainage Report - 033116-Town Comments April 6, 2016 Final 2
-  1 - River Bend PUD - Drainage Report - 033116-Town Comments April 6, 2016 Final 3
-  River Bend PUD - Drawings - 040116 Engineering Comments April 6 2016
-  River Bend PUD - Drawings - 040116 Engineering Comments V2 April 7 2016

VIII. Neighbor Comments (see attached)

WRITTEN STATEMENT

04/27/16

River Bend PUD with Zoning Amendment 501 W. Main, Lyons CO

A. Background

1. For over 30 years the 501 W. Main property has been identified as "River Bend Mobile Home Park" and provided housing for as many as 33 residents of mobile homes and manufactured housing. Lyons Properties LLC acquired "River Bend" in 2006 and managed the mobile home park until it was destroyed in the September 2013 flooding of the North St. Vrain River. The original residential dwelling on 501 W. Main survived the flooding with no substantial damage. Other accessory structures and improvements (well house, pump house, etc.) remain useable following the post-flood cleanup of the property and partial restoration of the grounds. In 2014 the Town of Lyons issued a temporary special use permit to allow for use of these properties as a venue for hosted events including weddings, community gatherings, fund raising efforts, etc. This special use permit has been extended and currently expires in September of 2016. The Town Administrator has committed to extending the current temporary use permit through 2017.

2. Effective January 12, 2016, The Town of Lyons and Lyons Properties LLC entered into a Memorandum of Agreement (MOA) which addresses: construction of municipal water and sanitary sewer service improvements through to and through the Subject Property including corresponding easements; construction of improvements in the North St. Vrain channel along including corresponding easements; coordination and correction of property boundaries shared by the Parties; and, clarification of Town of Lyons water and sewer taps related to properties owned by Lyons Properties LLC.

B. Proposed Use and Development

1. Current and Near Term (0-5 years)

Please refer to accompanying Drawing Sheet A02 – Site Plan for identification and location of existing and proposed new improvements on the subject property.

- (a) Event hosting on the Subject Property is supervised and produced by Lyons Farmette LLC, an experienced and active local business, which, along with their approved subcontractors, practice and promote "green" business operations for all hosted events. The existing and proposed onsite event hosting facilities are as follows:
 - i. The seasonally erected Canopy Tent provides shelter from sun and rain for hosted event ceremonial seating and catered dining;
 - ii. The Glamping Tent provides a private dressing and lounge area for bridal parties;
 - iii. The Mobile Toilet Trailer currently provides sanitation facilities in support of all hosted events.
 - iv. The Stone Patio provides a hard surfaced gathering area for entertainment and dancing associated with hosted events.
 - v. The Fire Pit area is turf surfaced and available for casual recreation and gathering;
 - vi. The proposed Pavilion is a covered and enclosed 4,000 sf structure for use in inclement weather and as an indoor venue for amplified music performance. The necessity of this facility will be determined during the 2016 and 2017 seasons based on success of booking weddings and other

events subject to limitations on amplified outdoor music. The exact location and exterior character of the structure will be reviewed and approved by PCDC prior to building permit submittal.

- vii. The following list of hosted events is representative of recent activity in 2014 and 2015 and anticipated activity in 2016 and beyond:
 - (1) Approximately 60 weddings with an average attendance of 150 guests and 80 vehicles are scheduled from mid May through mid October on Thursday (infrequently), Friday, Saturday and Sunday;
 - (2) Charitable fundraising events including: the Lyons Community Foundation Dinner and Fundraiser, Art Show benefiting the Lyons Arts and Humanities Commission (LAHC) and the Boulder County Arts Alliance (BCAA), "CAN' Aid" event sponsored by Oskar Blues; Colorado Haiti Project; and, Earthquake Recovery Benefit for Sengma, Nepal;
 - (3) The Boulder Community Foundation "Founders" appreciation and cocktail party event;
 - (4) "Luna Fest" women's bike ride and dinner; and,
 - (5) Several mid-week corporate retreats for local and regional businesses.
 - (b) Wee Casa LLC is a Lyons based business which offers "Tiny Homes" available for short term lodging at River Bend. The Tiny Homes are registered with the State of Colorado as recreational vehicles (RVs) and arranged as a campground village. In 2015, Wee Casa put 11 Tiny Homes into service on the Site (10 as lodging units and 1 as an office unit). Wee Casa is currently working to extend the "Lyons Days" of wedding participants and attendees of other Lyons based events scheduled in 2016 with the addition of 10 lodging units. Wee Casa also plans to support local manufacture and sale of Tiny Homes and provide a showcase for Tiny House lifestyles, cutting edge building design and construction techniques. As an active participant in the Tiny Home Movement, Wee Casa will encourage and attract enthusiasts of Tiny Homes to experience all that the Lyons community has to offer.
 - (c) During Rockygrass and Folks Festival the River Bend grounds are supervised and managed by Planet Bluegrass to provide tent camping (up to 700 people) and temporary car parking (up to 300 vehicles) as an adjunct to offsite camping and parking provided elsewhere in the Town. This was undertaken for the first time in 2014 and welcomed since with rave reviews from participants who appreciated the convenient proximity of River Bend to both the Planet Bluegrass festival grounds and Downtown Lyons. Patrons also appreciated the convenient (and safe) crossing of Highway 36 afforded by the existing supervised pedestrian walkway near the River Bend entrance. Additional temporary toilet facilities are provided by Planet Bluegrass at River Bend during the festivals. Shower facilities for River Bend campers remain available on the Planet Bluegrass festival grounds.
 - (d) The existing Residence on 501 W. Main will remain in use as a single family residence.
 - (e) The Utility Building houses the primary irrigation system pump and controls along with providing storage for facility maintenance tools and materials.
2. Longer Term (5-15 years)

The Applicant intends on developing a boutique hotel on the subject property which would include: approximately 50 guest lodging rooms, associated residential condominiums, membership based recreation and fitness facilities, restaurant, and ancillary guest convenience retail shopping. We've begun positive discussion with consultants experienced in development and management of hospitality projects of this nature. The ultimate scope and timing of this development would be dependent on the success of our initial offering of Tiny Home lodging on the property and the future economic climate. Any development of this

scale would occur in coordination and compliance with the community development process and standards of the Town of Lyons.

C. Need for PUD with Zoning Amendment

Both the close proximity of the subject property to Downtown and the commercial zoning of adjacent properties also fronting the Highway 36 corridor provide a unique opportunity for additional commercial redevelopment within walking distance of Downtown Lyons. In 2015 the Lyons Board of Trustees supported the concept of this development and recommended that the Project be presented for their consideration and approval as a Planned Unit Development (PUD) with Zoning Amendment. The requested PUD-C zone designation and associated uses would provide the diversity and flexibility necessary to meet the Town's goals of expanding a commercial based economy and providing much needed lodging.

D. Impact on Neighboring Properties

1. Adjacent commercial zoned neighbors (505 W. Main, 507 W. Main, 513 W. Main):

The primary impact of approval of the proposed PUD with Zoning Amendment on these adjacent C zoned properties would be positive, i.e. access to Town of Lyons municipal water and sewer services.

2. Adjacent R-2 zoned neighbors (503 and 517 W. Main)

These properties are owned by Lyons Properties LLC. The primary impact of approval of the proposed PUD with Zoning Amendment on these properties would be positive, i.e. access to Town of Lyons municipal water and sewer services.

3. Adjacent A-1 zoned neighbors and other residential zoned neighbors-at-large:

As a result of the 2014 and 2015 event hosting operations at River Bend, the primary concern expressed by these neighbors involved timing and impact of sound (both recorded and live music) associated with these events, especially weddings. Lyons Properties LLC (and our tenant businesses operating on the property) appreciate the support of the Lyons community and are fully committed to being good neighbors. The Applicant has worked diligently with neighboring property owners in an attempt to control sound associated with event production on the Site. Based on the recommendation of a majority of these neighbors (and effective 11/01/2015) the Applicant has committed to the following :

- (a) Outdoor live entertainment is limited to non-amplified instruments;
- (b) Outdoor amplified background music, vocals and public address system announcements are carefully limited to the minimum functional sound level. The Applicant agrees to immediately reduce or eliminate any amplified sounds subsequently found to be objectionable by the Town Administrator or designee.

4. Adjacent POS zoned neighbor (Town of Lyons Meadow Park)

The mixture of traditional uses at Meadow Park and those proposed at River Bend are similar and supportive of one another: recreation, event hosting, camping and lodging. The redevelopment of River Bend will positively impact the experience of Meadow Park patrons by expanding and preserving the visual and riparian nature of the opposite bank of the North St. Vrain River.

E. Site Access and Traffic Impacts

1. Vehicular and Emergency Access:

As indicated on the Site Plan (Drawing Sheet A02), the Property enjoys the benefit of an existing access point onto Highway 36. A looped driveway extends through the Property to for access to the Tiny Home

Village and additionally provides a turnaround for emergency vehicles. Unlike previous events in 2014 and 2015, during the last Festival event of 2015 there was a temporary backup in the westbound lane on Highway 36 resulting from auto traffic yielding to continuous and uncontrolled pedestrians in the crosswalk near the Subject Property's access point onto Highway 36. Once proper control of the pedestrian crossing was re-established, the traffic backup was resolved.

2. Pedestrian:

No negative pedestrian impacts have been reported during the course of 2014 and 2015 event hosting and festival camping operations at River Bend.

F. Availability of Utilities

1. Potable Water Service

- a. The Subject Property is currently served by a domestic water well which provides water service to the existing residence and the mobile restroom facility. Under the MOA, the Town has committed to construction of a 12" water transmission line and an associated short section of 8" main which cross the southeastern limb of the subject property in a public utility easement near the N. St. Vrain River. The 8" main will include a new 1" water service to 501 W. Main. A new fire hydrant will also be installed on the subject property in the vicinity of the 8" water main. This main will also include new ¾" water taps serving 503 and 517 W. Main properties adjacent to the subject property. It is the intent of the Applicant to modify the existing private water service piping infrastructure to connect the Subject Property as well as 503 and 517 W. Main to the Town of Lyons water system as soon as these connections become available. The Applicant is prepared to work diligently with the Town in order to complete the work as soon as reasonably possible.
- b. The routing of the 12" transmission line also allows for the potential for extension of a water service to the existing C zoned properties which front on Hwy 36, if needed. The Applicant is prepared to work diligently with the Town in order to complete the work as soon as reasonably possible.

2. Sanitary Sewer Service

- a. The Subject Property and 503 W. Main currently share a private sewage lift station that transmits effluent to the Town's pressurized sewer main running on the west side of Hwy 36. In agreement with the Town Engineer, it is the preference and intent of the Applicant to abandon this lift station and pressurized feed in favor of connection to a proposed gravity flow sewer main extending from Meadow Park to cross the North St. Vrain and terminate in the utility easement near the southernmost corner of 501 W. Main noted above. A similar situation with a separate private lift station and pressurized feed also exists on 517 W. Main. Under the MOA, the Applicant is responsible for payment for this sewer main extension. It is the intent of the Applicant to modify the existing private sewer service piping infrastructure to connect the Subject Property as well as 503 and 517 W. Main to the Town of Lyons sanitary sewer system as soon as these connections become available. The Applicant is prepared to work diligently with the Town in order to complete the work as soon as reasonably possible.
- b. Five (5) separate new sanitary service connections are proposed to the new municipal sanitary service main:
 - i. 4" service to 517 W. Main residence(s)
 - ii. 4" service to 503 W. Main structure
 - iii. 4" service to 501 W. Main residence
 - iv. 4" service to 501 W. Main Mobile Restroom Trailer (also serving future Pavilion structure toilet facilities or replacement Restroom structure)
 - v. 6" service to 501 W. Main Tiny Home

3. Irrigation Water

The Applicant currently leases water from the North St. Vrain and Lefthand Water Conservancy District for use in irrigating the grounds at 501 W. Main. This arrangement will continue for the foreseeable future.

4. Other Utilities

501 W. Main is currently served by natural gas, electric power and communications (cable) utilities. The existing services for 501 W. Main are adequate for the uses proposed on this Site. The existing accessory residence requires no expansion of services. The previous mobile home park included 33 gas/electric services. The proposed Tiny Home lodging village will require only (22) electric services (110V, 30A) and no gas services. Future requirements of the Pavilion will be determined at the time of development of this structure.

G. Impact on Public Facilities and Services

No negative impacts on public facilities or services have been apparent during the course of 2014 and 2015 event hosting and festival camping operations at River Bend. Availability of Town water, installation of a new on-site fire hydrant, and improved accessibility of emergency vehicles will both have a positive impact on public services.

H. Fiscal Impact Analysis

1. Lyons Farmette LLC employs 8 local people (full and part time) and 2 interns every season. Weddings bring business to town in various ways: even in the absence of lodging, wedding parties and staff typically enjoy coffee, lunch or dinner somewhere in Lyons; this is true of wedding guests too; and, thousands of visitors drawn to Lyons for (usually) happy events is valuable marketing.
2. Wee Casa LLC currently employs 2 local people and will employ additional local support staff for management and maintenance of the lodging units. Providing Lyons visitor's the opportunity to stay overnight expands the fiscal impact available to the Town in obvious ways. Locating lodging near the downtown merchandising center is additionally beneficial. As the number of in-town lodging units grows, the Town has the opportunity of generating additional revenue through a "bed" tax.
3. Planet Bluegrass is already a large asset and revenue base for the Town of Lyons. Providing additional facilities for festivarians to conveniently camp and park close to Downtown shopping and dining opportunities further leverages this asset.

I. Environmental Impact Analysis

The proposed improvements associated with approval of the PUD with Zoning Amendment would have the following impacts:

1. Removal of existing screen fencing on the common property line between 501 W. Main and 517 W. Main which would reduce existing obstruction in the North St. Vrain River floodway (see Drawing Sheet A02 - Demolition Note D01).
2. Removal of up to (7) existing trees (see Drawing Sheet A02).
3. Disturbance of the North St. Vrain River bed and banks in the vicinity of the proposed new sanitary sewer and water mains serving the Site and disturbance of the existing landscaping for installation of new sanitary sewer and water service lines (see Drawing Sheet A02). This disturbance of the existing riparian area will be offset by proposed restoration of impacted banks by the Town of Lyons as part of the Meadow Park Renovation Project.

4. Conversion of approximately 24,000 square feet of existing grass and ground cover to new gravel roadway and parking (see Drawing Sheet A02).
 5. Disturbance of the existing turf landscaping in the area of the Proposed Tiny Home Village for new utility infrastructure and, similarly, the disturbance to turf landscaping associated with connection of existing sewer and water service piping to municipal water and sewer mains.
- J. The intent of the proposed PUD with Zoning Amendment is in alignment with the following elements of the most recently updated Town of Lyons Comprehensive Plan:
1. Guiding Principles
 - a. Economic Sustainability:
 - i. Promote a business-friendly environment that encourages commercial and job growth according to community members' vision and desires.
 - ii. Transition from a residential-development based economy to a commercial-based, localized economy.
 - iii. Reduce retail leakage and attract Front Range day-trip tourists to support the local economy.
 - b. Quality of Life, Social Well-Being, Sustainability:
 - i. Support the public and private provision of cultural, educational, social and healthcare services.
 - ii. Sustain Lyons' key characteristics, as defined by residents' vision and desires:
 - (1) Small-town atmosphere
 - (2) Parks, trails and recreational opportunities
 2. Land Use and Growth Goals, Objectives and Strategies:
 - a. Land Use and Growth Strategy 1.1.3: Ensure that new development is compatible with the neighborhood in which it is located by evaluating projects with respect to magnitude, scale and diversity of product type so that no single project or combination of projects overtakes the character of the community. Also consider buffers and transitions between land uses; street and trail connections and building height, location and appearance.
 3. Economic Development Goal, Objectives and Strategies:
 - a. Economic Development Strategy 1.3.1: Support efforts to encourage entrepreneurship and to nurture businesses throughout the Lyons Planning Area.
 - b. Economic Development Strategy 2.2.1: Focus on encouraging the development of lodging facilities.
 4. Lyons Comprehensive Plan Update Survey results:
 - a. Question 14: Which two changes to Lyons would you most like to see?

Hotel:	38.1% - 1 st choice; 61.9% - 2 nd choice
More tourist destinations:	25.8% - 1 st choice; 74.2% - 2 nd choice

b. Question 25: Town's response to revenue shortfall should be?

Promote commercial development: 69.8% - 1st choice (favored result)

Annex additional commercial properties: 53.5% - 2nd choice (favored result)

c. Question 26: To which of the following should the Town give priority?

Attract new commercial businesses: 52.4% - 1st choice (favored result).

Expand existing business : 30.7% - 2nd choice (favored result)

d. Question 28: Rate the following areas of transportation in Lyons:

Lyons as a walkable community: 38.0% - Very good (favored result)

Ease of driving in Lyons : 41.2% - Good (favored result)

e. Question 30: It is important to allocate the Town's limited transportation funds to:

Improve Lyon's walkability : 42.3% - Strongly agree (favored result)

K. Approval of the proposed PUD with Zoning Amendment would produce the following public benefits:

1. Immediate increase in guest lodging facilities within Lyons with the prospect of greater expansion in the future.
2. Expansion of the Town's water and sewer services and associated revenues.
3. Improvement of the reliability of the Town's water service system via potential future looped water transmission line.
4. Elimination of potentially difficult and expensive maintenance of the small sewer lift station which currently serves the subject property.
5. Increased exposure of thousands of River Bend patrons to the unique charm and attractiveness of Lyons to visitors with walking distance of downtown businesses
6. Development of private facilities that would support and supplement the town's investment in redeveloping Meadow Park as a year round destination.
7. Increased support for local businesses and charitable organizations by providing an attractive venue for both fun and fund – raising.
8. Long term investment in a neighborly extension of the natural backdrop of newly redeveloped Meadow Park on the private side of the North St. Vrain.

REQUEST & RATIONALE

04/27/16

River Bend PUD with Zoning Amendment 501 W. Main, Lyons CO

Lyons Properties LLC, Applicant, owns the Subject Property which consists of 501 W. Main (245,927 SF / approx 5.646 net Acres), currently zoned R-2.

REQUEST

The Applicant requests that, related to the Subject Property, the Town of Lyons Planning and Community Development Commission and Board of Trustees accept this Application for PUD with Zoning Amendment for review and approval of the following:

- A. Amendment of the existing R-2 zoning on the Subject Property to PUD-C.
- B. The PUD-C zone district would include the following permitted principal and accessory uses:
 1. Accessory building or use.
 2. Single family residence in existing residential structure on the Property.
 3. Automobile sales use, subject to the following conditions:
 - a. Sales shall be strictly limited to the twenty two (22) proposed RV's located on the Site
 - b. Sales shall be incidental and accessory to the other principal uses approved herewith.
 4. Bed and breakfast.
 5. Campground use, subject to the following conditions:
 - a. Any recreational vehicle used for short term lodging or office use on the Site shall:
 - i. Be fully licensed and ready for highway use. "Ready for highway use" means that it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and has no permanently attached additions.
 - ii. Occupancy for any individual term of lodging shall not exceed thirty (30) days.
 - b. Tent camping use shall be restricted to Special Events for a total of three (3) weekend tent camping events per year, each operating on the following schedule: Thu – camper arrival and setup; Fri through Sun – festivating; and, Mon – breakdown, cleanup and camper departure.
 6. Event center, small use, subject to the following conditions:
 - a. Outdoor music performed by live entertainment at events shall not include amplified instruments. Horns or percussion are not allowed. Woodwinds (e.g clarinets, flutes, etc. are allowed. One vocalist may use a microphone with amplification.
 - b. Outdoor Disc Jockey (DJ) style performance of amplified recorded music is not allowed.
 - c. Outdoor weddings:
 - i. During wedding ceremonies: the officiant and other members of wedding parties may use a microphone with amplification for readings, vows. Low level amplified recorded music or unamplified acoustic instruments only are allowed during the ceremony with one vocalist using a microphone with amplification. Wedding ceremonies are to be concluded no later than 5:30 pm.
 - ii. During cocktail hour and dinner: unamplified acoustic only instrumental music is allowed. The officiant and other members of wedding parties may use a microphone with amplification for toasts and announcements.
 - iii. After dinner music: unamplified acoustic only instruments are allowed with one vocalist using a microphone with amplification.

- d. All music shall end by 10:00 pm.
 - e. Outdoor low level amplified recorded music, vocals, and public address system announcements, or any other noise generated at any wedding or other special event conducted on the property shall be carefully limited to the minimum functional sound level. All uses conducted at River Bend shall also comply with the noise restrictions set forth in Sec. 10-11-10 Unreasonable Noise of the Lyons Municipal Code as it may be amended from time to time. The Applicant or any person or entity holding a function on the subject property shall immediately reduce or eliminate any amplified or other sounds when instructed to do so by a member of the Boulder County Sheriff's Office, other law enforcement or emergency services personnel or member of Town Staff.
7. Gallery.
 8. Hotel or motel.
 9. Parking garage or lot.
 10. Personal and business service shop.
 11. Professional office.
 12. Recreational facility.
 13. Restaurant, bar or other eating and drinking place.
 14. Retail establishment.
- C. The proposed PUD-C district would incorporate the following dimensional standards:
1. Minimum setbacks:
 - a. Front yard - twenty-five (25) feet
 - b. Side yard - ten (10) feet
 - c. Rear yard – twenty-five (25) feet
 2. Maximum building height: forty (40) feet
- D. The PUD-C zone district would include waivers from Town of Lyons development standards as follows:
1. Access roads must be designed and installed to support traffic loads and the fire protection apparatus equipment requirements of the International Fire Code and the Lyons Fire Protection District. A study prepared by a licensed Geotechnical Engineer must be submitted presenting the required preparation of sub-grades, pavement type and pavement thickness for any fire department and town access road. All roads must have an all weather surface and avoid excessive from gravel roads. Water quality runoff from roadways shall be accomplished with standard methods and techniques that can be implemented into the Site design. The Applicant intends to maintain the historic rural park-like character of the Site and requests a waiver of the Town's requirement for hard paving of roads and parking areas, In support of this request the Applicant offers the following rationale for paving on the Site:
 - a. Currently a 20 foot wide paved drive extends from the entrance down into the property approximately 170 feet. The development plan proposes to pave approximately 32 feet additional of the drive to extend past the entrance to the primary parking area. The proposed asphalt paved section recommended in this area is 3" of asphalt over 6" of class 6 aggregate base course.
 - b. Soft surface/ gravel is proposed for the remainder of the roads and parking areas. Proposed dust control for the roads and parking area include:
 - i. Gravel paving - The roads are to be surfaced with 4" class 6 aggregate base course.
 - ii. Reduced speed – Traffic movement within the site is typically 15 mph or less. The low speed significantly reduces the emission of dust.
 - iii. Grading – Below the asphalt paved section of road the typical property slope is only 1%-2%. Due to the minimal site grade the road surface should be mounded to shed surface water to the sides of the road to prevent ponding and deterioration of the road.
 - iv. Low traffic volume – The maximum daily traffic during the wedding season is 75 vehicles
 - v. Dust Palliative – Should dust emission become an issue, a Calcium Chloride dust palliative will be used to stabilize the surface.

- c. The use of a gravel drive allows for the infiltration of storm water reducing runoff. Even though a compacted gravel would be less pervious than the adjoining lawn area it still offers more absorption than asphalt. In addition, asphalt pavement surfaces contribute significantly to the urban heat island effect. Their relatively high temperature, caused by absorption of solar energy, results in emission of heat to the surrounding air, leading to a rise in its temperature, deterioration of its quality.
2. Parking lot pavement and interior landscaping (See also Waiver Item 1 above).
3. Provide street frontage side walk.
4. Defined separation of internal pedestrian and vehicular circulation.
5. All existing outdoor lighting fixtures that are not cut-off / downcast shielded luminaires shall be immediately replaced with code compliant shielded fixtures, excepting light bulb strings used for minimal decorative, safety and security lighting in event production and camping areas. All of new outdoor lighting fixtures shall be cut-off / downcast shielded luminaires and shall require submission and approval of a photometric lighting plan that depicts the distribution of lighting and fixture types and locations and show any impacts on adjacent properties.
6. 4% slope approach on main entry road is required (Existing approach to be retained is 7.7%).
7. When abutting any A, E, R-1, R-2, R-2A or R-3 District, the yard between the zone district boundary and any building shall not be less than three (3) times the height of the proposed building. This standard is requested to be varied through the PUD process and replaced with a 10 ft. side yard.

RATIONALE

The subject property, improvements and existing use were substantially impacted by the September 2013 flood event. The demonstrated actual event, coupled with the likelihood of future changes in flood plain extent, make the existing medium density residential (R2) zoning unsuitable. A change to a more diversified and flexible zone district designation is both warranted and timely in order to meet the Town's long term public safety and economic development goals. We believe these conditions comply with the intent of the following paragraphs of the Official Zoning Map amendment approval criteria (Sec 16-15-40):

- (2) *To rezone an area or extend the boundary of an existing district because of changed or changing conditions in a particular area or in the Town generally.*
- (3) *The area requested for rezoning has changed or is changing to such a degree that it is in the public interest to encourage development or redevelopment of the area, and the rezoning will be consistent with the goals and policies of the Comprehensive Plan.*

PROJECT AREA
5.646 Acres (Property), 5.973 Acres (Proposed PUD-C Zone District)

PROJECT CONTACT INFO
Owner: Lyons Properties LLC (Mike Whipp) PO Box 312 Lyons, CO 80540 (303) 823-9751
Planner: JM Associates Inc. (Jerry Moore) PO Box 18390 Boulder, CO 80308 (303) 449-1887
Surveyor: Green Mountain Surveying (Sam Knight) 1195 Edinboro Dr Boulder, CO 80305 (303) 601-8588
Civil: Cornerstone Engineering (Mike Todd) 1692 Big Thompson Ave Estes Park, CO 80517 (970) 586-2458

PROJECT INTENT
In the long term (5-15 years) Lyons Properties LLC intends on developing a boutique hotel on the subject property which would include: approximately 50 guest lodging rooms, associated residential condominiums, membership based recreation and fitness facilities, restaurant, and ancillary guest convenience retail shopping. Our first steps down this road have included discussion with consultants experienced in development and management of hospitality projects of this nature. This PUD and Zoning Amendment is the next logical step toward this goal. In addition to providing increased economic and community benefit to the Town of Lyons, our currently proposed combination of Tiny Home lodging coupled with hosting of private and community based events will allow us to gauge the viability of our ultimate plan for the River Bend property.

PUD with ZONING AMENDMENT

The Owner requests amendment of the existing R-2 zoning on the Property to PUD-C (Commercial). The PUD would require an amendment approved by both the PCDC and the BOT to add a use not specifically included in the following permitted principal and accessory uses:

- Accessory building or use.
- Single family residence in existing residential structure on the Property.
- Automobile sales use, subject to the following conditions:
 - Sales shall be strictly limited to the twenty two (22) proposed RV's located on the Site
 - Sales shall be incidental and accessory to the other principal uses approved herewith.
- Bed and breakfast.
- Campground use, subject to the following conditions:
 - Any recreational vehicle used for short term lodging or office use on the Site shall:
 - Be fully licensed and ready for highway use. "Ready for highway use" means that it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and has no permanently attached additions.
 - Occupancy for any individual term of lodging shall not exceed thirty (30) days.
 - Tent camping use shall be restricted to Special Events for a total of three (3) weekend tent camping events per year, each operating on the following schedule: Thu – camper arrival and setup; Fri through Sun – festivating; and, Mon – breakdown, cleanup and camper departure.
- Event center, small use, subject to the following conditions:
 - Outdoor music performed by live entertainment at events shall not include amplified instruments. Horns or percussion are not allowed. Woodwinds (e.g. clarinets, flutes, etc. are allowed. One vocalist may use a microphone with amplification.
 - Outdoor Disc Jockey (DJ) style performance of amplified recorded music is not allowed.
 - Outdoor weddings:
 - During wedding ceremonies: the officiant and other members of wedding parties may use a microphone with amplification for readings, vows. Low level amplified recorded music or unamplified acoustic instruments only are allowed during the ceremony with one vocalist using a microphone with amplification. Wedding ceremonies are to be concluded no later than 5:30 pm.
 - During cocktail hour and dinner: unamplified acoustic only instrumental music is allowed. The officiant and other members of wedding parties may use a microphone with amplification for toasts and announcements.
 - After dinner music: unamplified acoustic only instruments are allowed with one vocalist using a microphone with amplification.
 - All music shall end by 10:00 pm.
 - Outdoor low level amplified recorded music, vocals, and public address system announcements, or any other noise generated at any wedding or other special event conducted on the property shall be carefully limited to the minimum functional sound level. All uses conducted at River Bend shall also comply with the noise restrictions set forth in Sec. 10-11-10 Unreasonable Noise of the Lyons Municipal Code as it may be amended from time to time. The Applicant or any person or entity holding a function on the subject property shall immediately reduce or eliminate any amplified or other sounds when instructed to do so by a member of the Boulder County Sheriff's Office, other law enforcement or emergency services personnel or member of Town Staff.
- Gallery.
- Hotel or motel.
- Parking garage or lot.
- Personal and business service shop.
- Professional office.
- Recreational facility.
- Restaurant, bar or other eating and drinking place.
- Retail Establishment.

The proposed PUD-C district would incorporate the following dimensional standards:

- Minimum setbacks:
 - Front yard - twenty-five (25) feet
 - Side yard - ten (10) feet
 - Rear yard - twenty-five (25) feet
- Maximum building height: forty (40) feet

The PUD would allow for construction of a maximum 4,000 sf single story enclosed Pavilion Structure along with associated site improvements which would require development review approval by the Town of Lyons Planning and Community Development Commission and subject to ratification of this approval by the Town of Lyons Board of Trustees prior to building permit submittal. Construction of the Pavilion Structure would result in removal of the Mobile Restroom Trailer from the Property. Should the Pavilion construction be delayed beyond 5 years from the approval date of this PUD, the Applicant agrees to remove the Restroom Trailer and replace its functionality with a permanent Restroom Structure as noted on the accompanying Site Plan. The development approval process for construction of the Restroom Structure would require the process noted above for the Pavilion Structure.

The PUD-C zone district includes waivers / variances from the Town of Lyons development standards as listed below. Other variances may be requested with subsequent review of final design construction documents of the Project and will be processed in accordance with the Town Code as it relates to those specific items:

- Access roads must be designed and installed to support traffic loads, and the fire protection apparatus equipment requirements of the International Fire Code and the Lyons Fire Protection District. A study prepared by a licensed Geotechnical Engineer must be submitted presenting the required preparation of sub-grades, pavement type and pavement thickness for any fire department; and town access road. All roads must have an all weather surface and avoid excessive from gravel roads. Water quality runoff from roadways shall be accomplished with standard methods and techniques that can be implemented into the Site design. The Applicant intends to maintain the historic rural park-like character of the Site and requests a waiver of the Town's requirement for hard paving of roads and parking areas. In support of this request the Applicant offers the following rationale for paving on the Site:
 - Currently a 20' foot wide paved drive extends from the entrance down into the property approximately 170 feet. The development plan proposes to pave approximately 32 feet additional of the drive to extend past the entrance to the primary parking area. The proposed asphalt paved section recommended in this area is 3" of asphalt over 6" of class 6 aggregate base course.
 - Soft surface gravel is proposed for the remainder of the roads and parking areas. Proposed dust control for the roads and parking area include:
 - Gravel paving - The roads are to be surfaced with 4" class 6 aggregate base course.
 - Reduced speed - Traffic movement within the site is typically 15 mph or less. The low speed significantly reduces the emission of dust.
 - Grading - Below the asphalt paved section of road the typical property slope is only 1%-2%. Due to the minimal site grade the road surface should be mounded to shed surface water to the sides of the road to prevent ponding and deterioration of the road.
 - Low traffic volume - The maximum daily traffic during the wedding season is 75 vehicles.
 - Dust Palliative - Should dust emission become an issue, a Calcium Chloride dust palliative will be used to stabilize the surface.
 - The use of a gravel drive allows for the infiltration of storm water reducing runoff. Even though a compacted gravel would be less pervious than the adjoining lawn area it still offers more absorption than asphalt. In addition, asphalt pavement surfaces contribute significantly to the urban heat island effect. Their relatively high temperature, caused by absorption of solar energy, results in emission of heat to the surrounding air, leading to a rise in its temperature, deterioration of its quality.
- Parking lot pavement and interior landscaping (See also Waiver Item 1 above).
- Provide street frontage side walk.
- Defined separation of internal pedestrian and vehicular circulation.
- All existing outdoor lighting fixtures that are not cut-off / downcast shielded luminaires shall be immediately replaced with code compliant shielded fixtures, excepting light bulb strings used for minimal decorative, safety and security lighting in event production and camping areas. All of new outdoor lighting fixtures shall be cut-off / downcast shielded luminaires and shall require submission and approval of a photometric lighting plan that depicts the distribution of lighting and fixture types and locations and show any impacts on adjacent properties.
- 4% slope approach on main entry road is required (Existing approach to be retained is 7.7%).
- When adjoining any A, E, R-1, R-2, R-2A or R-3 District, the yard between the zone district boundary and any building shall not be less than three (3) times the

PROJECT STATISTICS

501 West Main	Photo	Status	Proposed Use	Flr Area				Parking				Ftprint		Ht	Setback [1]	BR	D.U.	Seats
				Sf	Req	Std	HC	Van	Sf	Ft	Ft	Sf	Ft					
Primary Dwelling	A	Existing	Single Family Res	1,140	2	3		1,423	20	103	2	1						
Pump House		Existing	Storage	10	0			10	5	49								
Service Bldg	B	Existing	Storage	562	0			562	9	46								
Canopy Tent	C	Proposed	Event Production	2,056	4	30	59	2	1	2,056	24	140					3	180
Glamping Tent	D	Proposed	Event Production	160	0			160	12	180								
Catering Tent	E	Proposed	Event Production	320	5	5	8			320	18	5						
Restroom Trailer	F	Proposed	Event Production	167	0			167	10	25								
Pavilion (Future)		Proposed	Event Production	4,000	3			4,000	32	80							3	
Tiny Homes (21)		Proposed	Accommodations	4,200	21	20	1	2,400	13	25	21	21						
Tiny Homes Office		Proposed	Office	200	1			200	13	15								
Property TOTAL				12,815	59	90	3	11,298			23	22	180					

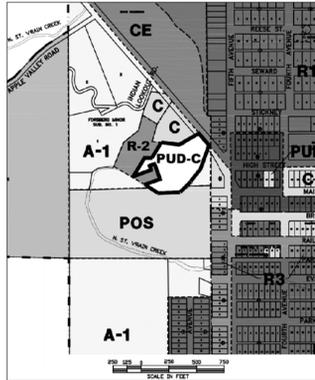
- Note:** [1] Setbacks are measured from point of structure nearest to an external property line.
[2] Over requests allowing residential use to continue in these structures until converted to lodging
[3] Canopy Tent and Pavilion would not be occupied simultaneously
[4] Required parking based on Institutional, Church, Club use: 1 space per 6 seats
[5] Required parking based on 1 space per staff member

River Bend PUD with Zoning Amendment

501 West Main Street

Lyons, Colorado

PRELIMINARY PUD PLAN



Vicinity Map

SHEET INDEX

- A00 Cover Sheet
- A01 Zoning Amendment Map
- A02 Site Plan
- Survey

SITE COVERAGE DATA

	Footprint	Paving		Landscape		River	Lot Subtotal
		Impervious	Permeable	Turf	Native		
501 West Main	11,298	3,949	49,479	143,769	32,760	15,651	245,926
SUBTOTAL	11,298	3,949	49,479	143,769	32,760	15,651	245,926
<i>Coverage Ratios</i>	<i>4.59%</i>	<i>1.61%</i>	<i>20.12%</i>	<i>58.47%</i>	<i>13.32%</i>	<i>6.36%</i>	<i>100.00%</i>
SITE TOTAL							5.646 Ac

UTILITIES

501 W. Main is currently served by municipal sanitary sewer service via a private lift station that ejects via 4' lines to the pressurized main running parallel to the west side of Highway 36. As part of the proposed improvements, and in cooperation with the Town's reconstruction of Meadow Park, the Project proposes to connect to a new gravity flow sewer sanitary main extending through Meadow Park and crossing the North St. Vrain onto the 501 W. Main property. In addition to allowing abandonment of the lift station, further extension of this main could potentially serve other properties neighboring 501 W. Main. The property currently relies on treated well water for irrigation and potable water. This was supplemented in 2015 with a private "delivered" water system with onsite tanks and pressurization which will be removed upon connection to the Town's potable water system. The Applicant and the Town of Lyons have reached a Memorandum of Agreement regarding, in part, installation of a new 12" transmission line through the property along with an associated short section of 8" water main terminating at a new fire hydrant located on 501 W. Main. As part of this agreement 501 W. Main will receive: a 1" water service to providing potable water for the existing residence, (2) Tiny Homes, (1) Office trailer and the Mobile Restroom Trailer; and, a 6" sewer service connection. Upon construction of the enclosed Pavilion Structure, the Mobile Restroom Trailer will be removed and the associated water and service lines will be rerouted to serve the toilet facilities in the Pavilion. Irrigation will remain well fed. Natural gas currently serves the Property and no expansion is required. Onsite electrical service can adequately serve including the Phase 1 and Phase 2 additions of Tiny Homes. The Applicant acknowledges that backflow devices may be required by the Town of Lyons upon connection to the potable water system. The existing Utility Building requires no new or sewer service connections.

ACCESSIBILITY

Most of the Site is relatively flat and manageable for patrons with disabilities. The steepest areas occur near the banks of the North St. Vrain. Ramps with ADA compliant slopes provide access to activity centers in these areas (Fire Pit, Stone Patio). The Restroom Trailer is accessibility compliant. There are currently no regulations in effect in Colorado for accessibility to recreational vehicles or campgrounds. In spite of the absence of standards, the Tiny Home operator, Wee Casa LLC, has done extensive research on this matter and is working with their manufacturer to develop to include accommodations suitable for their disabled guests. Prior to completion of Phase 2, we will have paved accessible parking spaces and adjacent access aislesways at the locations shown on Sheet A02. It is, and has been, the policy of the Applicant to provide access to and from pedestrian routes along Highway 36 for all invited guests. In the absence of a private sidewalk along the existing main driveway, the Applicant will continue to provide our disabled guests the availability of van or electric cart shuttle between the driveway entrance at Hwy 36 and event hosting facilities and lodging on the Site.

GRADING & DRAINAGE

See accompanying Grading and Drainage Reports.

EMERGENCY RESPONSE

The applicant has implemented and will maintain a current numbering system for the Tiny Homes and a map of the layout showing the temporary numbers and the layout of the units to facilitate emergency response.

The applicant has implemented and will maintain a Storm Emergency Plan with a procedure to move RV's with or without tow vehicle at the ready to high ground during flooding or high water. The Plan should include:

- Enough land/space for a temporary storage area to move and park the vehicles;
- Permission to use or lease, or ownership of the land;
- Personnel and Vehicles dedicated and available (qualified drivers) to move RV's on short notice;
- A primary and secondary route to efficiently move the RV's to high ground temporary storage, both routes avoiding other flood situations;
- A method to determine the priority of vehicle movement; and,
- The monitoring of inclement weather conditions.

FIRE PROTECTION

No fire hydrants currently exist on the Property. As a part of the installation of a municipal water transmission line through the site, a new fire hydrant will be installed in the new public utility easement in the northwest corner of the Site adjacent to the proposed alignment of the new 12" water transmission line (see Sheet A02). A new proposed security gate just west of the main entry to the property will include a NOX box for emergency access. Upon completion of work in Phase 2 a 20' wide loop road around the Tiny Home Village will allow for emergency vehicle turn around without backup. A Hammerhead extension of the driveway in the vicinity of the proposed fire hydrant provides backup access by emergency vehicles.

SIGNAGE

A single non-illuminated sign with an approximately 4' wide x 3' high face is located on the south side of the main entrance from Highway 36. Prior to completion of Phase 2, we plan on moving it to the north side of the entry, outside of the required sight triangle.

TRAFFIC

Included as an attachment to this submittal is a copy of the documentation which we submitted to CDO for issuance of an access permit which the Town required before approving the Temporary Special Use Permit under which we've been operating since June 2014. CDOT issued the access permit based on the estimated trips associated with the same scope and intensity of uses that are requested as part of this PUD with Zoning Amendment. The Applicant must provide a copy of a CDOT access permit prior to recordation of the PUD.

PEDESTRIAN CONNECTION

The area along Colorado Highway 36 northwest of the existing entry to the Site will be rough graded to form a bench for a future sidewalk along the CDOT highway frontage. The platform will accommodate future extension of a concrete sidewalk equivalent in width to the existing sidewalk in this area. This grading will require vertical extension of an existing utility manhole and water valve in the vicinity. The current pedestrian connection to the Site occurs via the existing driveway.

PROJECT PHASING

Construction of Phase 1 of the Project will commence immediately upon approval of this PUD with Zoning Amendment. We anticipate completion of Phase 1 improvements by mid May 2016, however if the final approval of the PUD occurs after May 1, 2016, completion of Phase 1 improvements may be delayed until November 30, 2016. We anticipate completion of Phase 2 improvements by mid May 2017, however, completion of this phase is subject to availability of water and sewer service from the Town of Lyons (see UTILITIES below). Phase 3 (Pavilion or Restroom Structure) timing would be based on necessity but would occur no sooner than mid May 2018. Please refer to Sheet A02 of this submittal for an outline of proposed improvements by Phase.

LEGAL DESCRIPTION:

A TRACT OF LAND IN THE SW ¼ OF SECTION 18, T3N, R70W OF THE 6TH P.M., TOWN OF LYONS, COUNTY OF BOULDER, STATE OF COLORADO, BEARINGS ARE BASED ON THE NORTH-SOUTH CENTERLINE OF SAID SECTION 18 AND ASSUMED AS BEARING N00°00'45"E, WITH ALL OTHER BEARINGS HEREIN RELATIVE THERETO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE C. 1/4 OF SAID SECTION 18;
THENCE ALONG THE NORTH-SOUTH CENTERLINE OF SAID SECTION 18, S00°00'45"W, 431.90 FEET TO A POINT ON THE SOUTH LINE OF THE R.O.W. OF STATE HIGHWAY NO. 66 (AKA HIGHWAY 36);
THENCE LEAVING SAID NORTH-SOUTH CENTERLINE AND ALONG SAID SOUTH R.O.W., N38°33'00", 28.98 FEET TO THE TRUE POINT OF BEGINNING, SAID POINT ALSO BEING THE CENTERLINE OF NORTH ST. VRAIN RIVER;
THENCE ALONG THE CENTERLINE OF SAID NORTH ST. VRAIN RIVER, THE FOLLOWING 7, CALLS:
S24°20'51"W, 172.60 FEET;
S44°05'12"W, 129.92 FEET;
S53°41'34"W, 77.56 FEET;
S71°42'55"W, 86.06 FEET;
N89°39'29"W, 187.06 FEET;
N68°22'42"W, 125.54 FEET;
N53°39'31"W, 122.97 FEET;
THENCE LEAVING SAID CENTERLINE, N71°07'35"E, 207.70 FEET;
THENCE N14°15'45"W, 132.83 FEET;
THENCE S71°07'35"W, 22.00 FEET;
THENCE S14°15'45"E, 21.50 FEET;
THENCE S71°07'35"W, 241.31 FEET;
THENCE N35°00'45"E, 189.59 FEET;
THENCE S86°58'00"E, 66.92 FEET;
THENCE N35°09'00"E, 174.68 FEET;
THENCE S83°32'00"E, 195.82 FEET;
THENCE N69°08'00"E, 162.09 FEET TO A POINT ON SAID SOUTH R.O.W. OF STATE HIGHWAY NO. 66 (AKA: HIGHWAY 36);
THENCE ALONG SAID SOUTH R.O.W., S38°33'00"E, 253.91 FEET TO THE POINT OF BEGINNING, SAID PORTION OF LAND CONTAINING 5.646 ACRES, MORE OR LESS.

BOARD OF TRUSTEES APPROVAL:

The Board of Trustees of the Town of Lyons, by Ordinance No. _____ approved this PUD with Zoning Amendment for 501 West Main Street, Lyons, Colorado, on the _____ day of _____, 2016.

Mayor or Mayor Pro Tem _____

ATTEST:

Town Clerk _____

(Town Seal)

OWNERSHIP SIGNATURE BLOCK:

By signature below, the owner acknowledges and accepts all the requirements and intent set forth in this PUD with Zoning Amendment for 501 West Main Street, Lyons, Colorado.

Manager, Lyons Properties LLC _____

State of Colorado _____

County of Boulder _____

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by _____.

Witness my hand and official seal.

My commission expires: _____

Notary Public _____

LIENHOLDER SUBORDINATION CERTIFICATE:

As a mortgagee or lienholder of certain real property addressed as 501 West Main, Lyons, Colorado, and recorded by the Boulder

County Clerk at Reception No. _____, the undersigned hereby subordinates said lien to the terms, conditions and restrictions of this PUD with Zoning Amendment.

Mortgagee/Lienholder: _____

State of Colorado _____

County of Boulder _____

The foregoing instrument was acknowledged before me this _____ day of _____, 2016, by _____.

Witness my hand and official seal.

My commission expires: _____

Notary Public _____

SURVEYOR'S CERTIFICATE:

I, _____, do hereby certify that the survey of the boundary of 501 West Main Street, Lyons, Colorado was made under my supervision and the accompanying Zoning Amendment Map accurately represents said survey.

(Land Surveyor's Seal)

Registered Land Surveyor _____

CLERK AND RECORDER CERTIFICATE:

STATE OF COLORADO _____

) ss.

COUNTY OF BOULDER _____

I hereby certify that this instrument was filed in my office at _____ o'clock, _____ M., this _____ day _____, 2015 and

is duly recorded in Plan File _____.

County Clerk or Deputy County Clerk _____

JM Associates, Inc.

Architecture / Planning

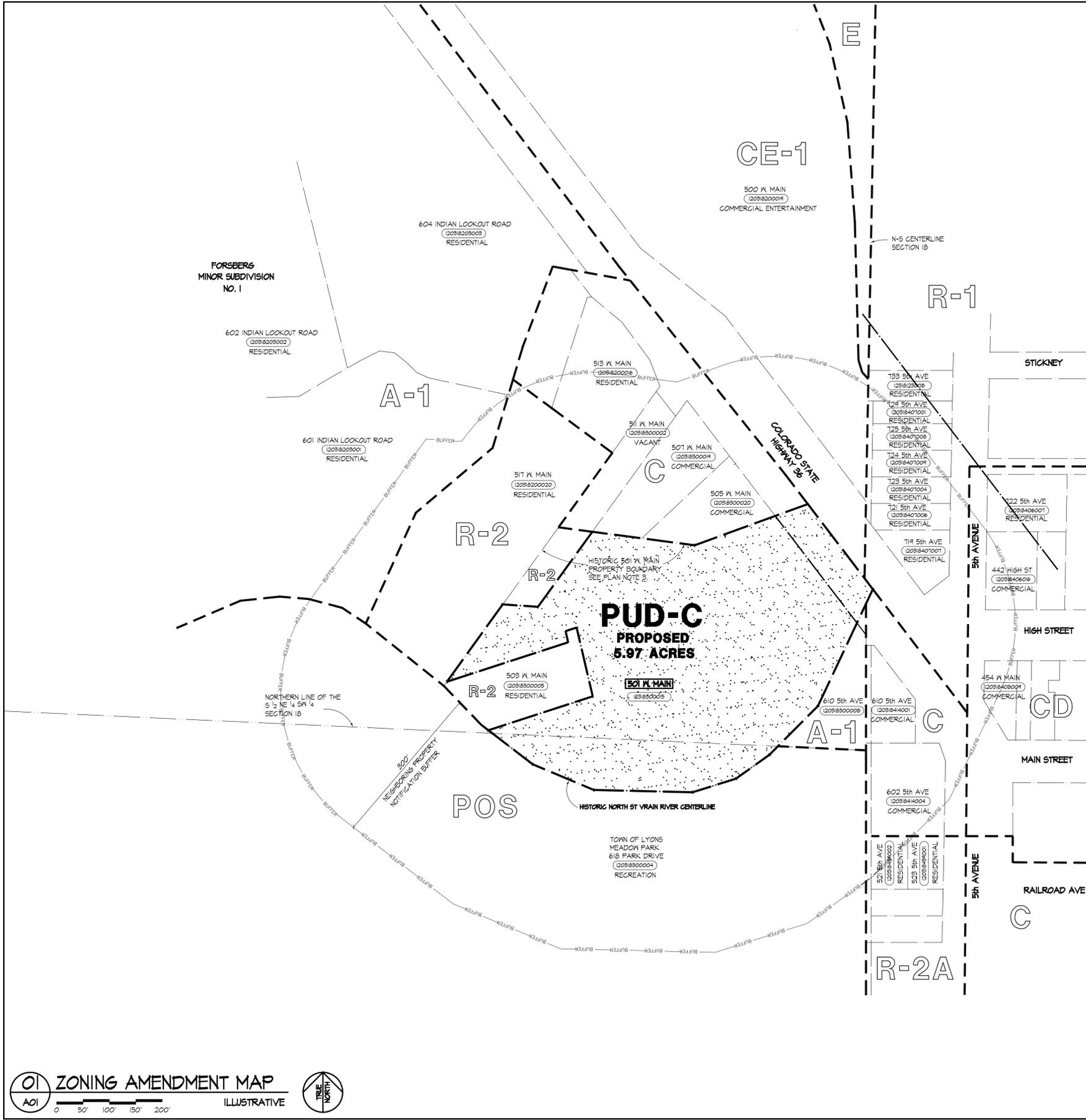
PO Box 18390
Boulder, Colorado 80308
(303) 449-1887

River Bend PUD with Zoning Amendment

501 West Main
Lyons, Colorado

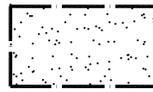
A00

03/03/16	PCDC PRELIM
04/01/16	PCDC FINAL
04/27/16	BOT FINAL



PLAN NOTES

1. THIS MAP IS ILLUSTRATIVE ONLY AND IS INTENDED FOR REVIEW AND COMMENT BY TOWN OF LYONS ADMINISTRATION, PLANNING AND COMMUNITY DEVELOPMENT COMMISSION, AND BOARD OF TRUSTEES. THE APPLICANT HAS ADDRESSED THE ISSUES BELOW WITH TOWN STAFF AND, UPON CLARIFICATION AND RESOLUTION OF THEM, WILL SUBMIT FOR APPROVAL A FINAL ZONING AMENDMENT MAP FULLY COMPLIANT WITH THE REQUIREMENTS OF SECTION 16-15-30 (b) (5) OF THE TOWN OF LYONS MUNICIPAL CODE.
2. IN RECOGNITION OF THE AVALANCHE FLOOD EVENT WHICH OCCURRED IN SEPTEMBER 2013, THE APPLICANT AND THE TOWN OF LYONS HAVE ENTERED INTO A MEMORANDUM OF AGREEMENT DATED JANUARY 12, 2016, WHICH ADDRESSES A PROCESS TO ALIGN THE MUTUAL PROPERTY BOUNDARIES OF THE PARTIES IN A MANNER CONSISTENT WITH BEST SURVEYING PRACTICE AND REGULATORY STANDARDS OF THE STATE OF COLORADO AND BOULDER COUNTY.
3. THE PARCEL ADDRESSED AS 511 W MAIN REPRESENTS A CLAIM OF TITLE BY BARBARA AND HOWARD BEALL [PARCEL NUMBER 120918300002] CONVEYED BY A BOULDER COUNTY TREASURER'S DEED IN 1999 [RECEPTION NO. 2010140]. AS CURRENTLY INDICATED BY THE BOULDER COUNTY ASSESSOR'S MAPPING DATABASE, THIS PARCEL APPROXIMATES 0.36 ACRES IN SIZE AND SPANS THE BOUNDARY BETWEEN THE EXISTING R-2 ZONE DISTRICT AND THE ADJACENT C ZONE DISTRICT. THE GRANTING TREASURER'S DEED INDICATES THE ORIGINAL PARCEL SIZE AS 0.24 ACRES. THIS IS FURTHER SUPPORTED BY THE ASSESSOR'S ACCOUNT [R0050493] WHICH INDICATES A 0.25 ACRE CURRENT SIZE OF THE PARCEL, AS REDUCED FROM 0.24 ACRE BY THE 2006 TRANSFER OF 0.04 ACRE TO THE COLORADO DEPARTMENT OF TRANSPORTATION FOR ADDITIONAL R.O.W. ALONG HWY 36. AT APPLICANT'S REQUEST THE BOULDER COUNTY TREASURER AND ASSESSOR OFFICES HAVE RECENTLY REVIEWED THE ACCOUNT FOR THIS PARCEL AND HAVE CONFIRMED THAT THE CORRECT SIZE OF THE PARCEL IS 0.25 ACRE. A PARCEL OF THIS AREA HAVING A WIDTH CORRESPONDING TO THE HWY 36 FRONTAGE WOULD EXTEND NO MORE THAN 200' SOUTHWEST OF THE HIGHWAY R.O.W. WELL SHORT OF THE NORTH BOUNDARY OF THE FORMER 'RIVERBEND MOBILE HOME PARK'. THE APPLICANT DISPUTES THE VALIDITY OF THE BEALL CLAIM AND ITS EXTENSION OVERLAYING THE PROPERTY THAT HAS BEEN POSSESSED, OCCUPIED, MAINTAINED AND IDENTIFIED AS 501 W MAIN FOR OVER 30 YEARS. NEVERTHELESS, BECAUSE OF THE LACK OF CLARITY IN TITLE CREATED BY THIS CLAIM, THE APPLICANT HAS EXCLUDED IT FROM THIS REZONING REQUEST, THIS RESULTING IN THE APPROXIMATELY 0.23 ACRE 'ISLAND' REMNANT OF EXISTING R-2 ZONING AS SHOWN.



SHADED AREA INDICATES EXTENT OF THE EXISTING R-2 ZONE DISTRICT PROPOSED TO BE AMENDED TO PUD-C. THE PUD-C DISTRICT BOUNDARY ALIGNS WITH: DESIGNATED CENTERLINE OF COLORADO HIGHWAY 36; HISTORIC CENTERLINE OF THE NORTH ST. VRAIN RIVER; EXISTING ADJACENT PROPERTY LINES; AND THE EXTENSIONS OF ADJACENT PROPERTY LINES TO THE NOTED R.O.W. CENTERLINES.

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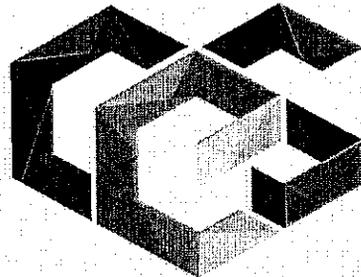
River Bend PUD with Zoning Amendment
 501 West Main
 Lyons, Colorado

**AMENDED
PRELIMINARY
DRAINAGE REPORT**

FOR

**RIVER BEND PUD
501 WEST MAIN STREET
Lyons, Colorado**

PREPARED BY:



CORNERSTONE
ENGINEERING & SURVEYING, INC.

1692 Big Thompson, Suite 200
Estes Park, CO 80517
970-586-2458

OWNER/DEVELOPER
LYONS PROPERTIES, LLC.

April 28, 2016

TABLE OF CONTENTS

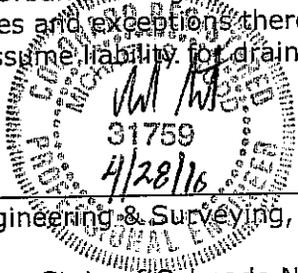
<u>ITEM</u>	<u>PAGE</u>
1.0 SCOPE	2
2.0 PROJECT DESCRIPTION	2
3.0 BASIN DESCRIPTION	3
4.0 DESIGN METHODS AND ASSUMPTIONS	5
4.1 Criteria for Hydrology Analysis.....	5
4.2 Drainage Plan Development	6
4.2.1 Detention Basin Design	6
4.2.2 Water Quality	7
4.2.3 Construction Erosion Control.....	7
5.0 CONCLUSIONS.....	9

TECHNICAL APPENDICES

- Appendix A - Hydrologic Analysis
- Appendix B - Water Quality Control Volume
- Appendix C - Soils Information
- Appendix D - FIRM/FIS Information

"I hereby affirm that this "Amendment to the Preliminary" report and plan for the Final drainage design of RIVER BEND PUD was prepared by me, or under my direct supervision, for the owners thereof, in accordance with the provisions of the Town of Lyons Manual Of Design Criteria and Standard Specifications for the Construction of Public Improvements and the Urban Drainage and Flood Control District Criteria Manual, and approved variances and exceptions thereto. I understand that the TOWN does not and will not assume liability for drainage facilities designed by others."

SIGNATURE: _____
Cornerstone Engineering & Surveying, Inc.



Registered Professional Engineer State of Colorado No. 31759 (Affix Seal)

"Lyons Properties LLC hereby certifies that the drainage facilities for RIVER BEND PUD shall be constructed according to the design presented in this report. I understand that the Town does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that the TOWN reviews drainage plans pursuant to Colorado Revised Statutes; but cannot, on behalf of RIVER BEND PUD, guarantee that final drainage design review will absolve Lyons Properties LLC and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the Final Plat, Final Development Plan, Planned Unit Development, and/or Subdivision Development Plan does not imply approval of my engineer's drainage design."

Name of Developer: _____

Authorized Signature: _____

1.0 SCOPE

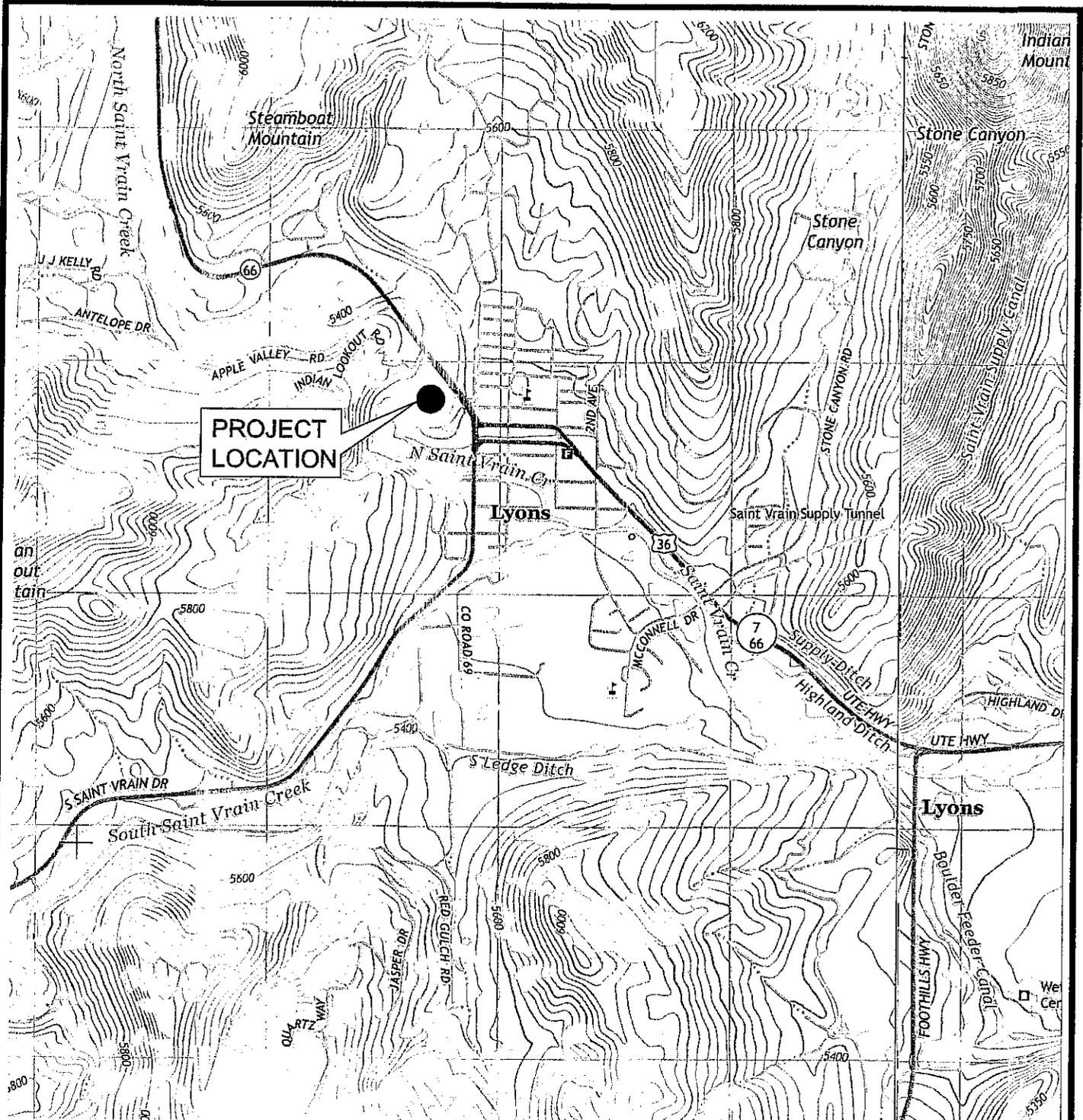
This report is a drainage analysis of stormwater runoff for River Bend PUD, 501 West Main Street in Lyons Colorado. Included herein is a drainage analysis providing the following details:

1. Identification of project site drainage patterns in the basin for the historic undeveloped and developed conditions.
2. Calculated peak runoff rates for the historic and developed 2 year and 100 year frequency storms and evaluation of the need for peak runoff mitigation.
3. Determination of Best Management Practice for stormwater quality for the average runoff producing storm.

2.0 PROJECT DESCRIPTION

The Project is located on the north edge of Lyons Colorado, in the SE ¼ Section 18, T3N, R70W of the 6th P.M., Boulder County, Colorado.

The property address is 501 West Main Street and is currently zoned R-2 (Residential) and was originally developed and occupied as a Mobile Home Park with paved roads. The Mobile Home Park was lost during the September 2013 flood. Since the flood the property has been used for outdoor assembly such as weddings. The property encompasses approximately: a 245,926 sf (5.64 acre) but the exact boundaries are still being resolved. Currently the property is occupied by a single residence, pump house, service building and 17 tiny homes for a combined area of approximately 5,400 sf; gravel drive with parking; landscaping including lawn cover with a number of mature cottonwood trees; One access currently exist on to the property from West Main Street. The property borders the North Saint Vrain Creek



0 1000 2000
SCALE 1" = 2000'

Produced by the United States Geological Survey
 North American Datum of 1983 (NAD83)
 World Geodetic System of 1984 (WGS84). Projection and
 1 000-meter grid: Universal Transverse Mercator, Zone 13T
 10 000-foot ticks: Colorado Coordinate System of 1983 (north
 zone)

JOB No: ---

**FIGURE 1
VICINITY MAP**

BY: MST DATE: 03/30/2016
 FILE: M:\807_002\Drainage\Figure-1.dwg



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along the southern and western boundary with a portion being located within the 100 year flood plain.

The current project proposes a combination of Tiny Home Lodging, a future pavillion coupled with the hosting of private and community based events.

The property is proposed to be rezoned from R-2 (Residential) to PUD-C (PUD Commercial).

The property is abutted to the south by the North Saint Vrain Creek and the Town of Lyons Meadows Park. Abutted to the east by West Main Street (Colorado State Highway 36) to the north by commercial development and the west by residential.

The current proposed improvements will include a canopy tent area, camping tent area, catering tent, Restroom Trailer, future pavillion and 22 Tiny Homes including an office and paved and gravel drives. Even though tent areas and the Tiny Homes allow for surface and infiltration below them they will be counted as impervious area for this report. The gravel driveways and parking are considered impervious since they are typically hardened surfaces that inhibit infiltration and contribute to storm runoff sediments.

	Existing Impervious Area	Proposed Impervious Area
Roadway, Parking, Sidewalks	16,597 sq. ft.	69,935 sq. ft.
Structures	2,618 sq. ft.	12,730 sq. ft.
Total Impervious	119,215 sq. ft.	82,665 sq. ft.

3.0 BASIN DESCRIPTION

Currently offsite stormwater enters the site from the western half of Highway 36, north of the property entrance and the north east corner of the property from a portion of Main Street Auto. The surface runoff from Highway 36 between the site entrance and North Saint Vrain Creek is collected at the west curb flowline and conveyed south to the creek. Stormwater leaving the property flows into the North Saint Vrain Creek along the southern and western boundaries of the property with a portion passing through 503 West Main Street before entering the creek.

The total evaluated basin contributing surface drainage to the proposed River Bend PUD is approximately 4.2 acres with 0.9 coming from offsite flows. Evaluated Stormwater flows are divided into a Basin "A", Basin "B" and Basin "C".

The property has been split into three basins due to the site topography. Also due to the topography trying to collect all of the stormwater leaving the property would be problematic. The primary portion of the property is relatively flat with slopes of only 1.5% to 2%. Surface drainage is divided through the approximate middle of the property with a portion sheet flowing to the southern boundary and a portion sheet flowing west. Trying to collect all of the stormwater from the southern portion of the property would require either installing a channel to convey the water around the property or installing a sediment basin all along the south edge. Due to the southwestern portion of the property being primarily flat lawn area which provides for infiltration and removal of sediment from the stormwater, the area was not evaluated for increased runoff or water quality. The basins have been configured to enable the collection of stormwater from the developed impervious areas.

The Basin-A consists of approximately 3 acres (130,040 sq. ft.) and is located along the northern half of the property and includes most of the developed impervious area including water entering the property from offsite. Flows from the Basin-B flow primarily to the west. For the purpose of this report the property is assumed to be undeveloped and only the offsite developed areas are included in the existing impervious area.

BASIN-A	Existing Impervious Area	Proposed Impervious Area
Total Impervious	19,215 sq. ft.	51,027 sq. ft.

The Basin-B consist of approximately 0.8 acres (34,6613 sq. ft.) and is located in the south central portion of the property and includes most of the main parking area. Flows from the Basin-B flow primarily off the west side of the parking area.

Basin - B	Existing Impervious Area	Proposed Impervious Area
Total Impervious	0	22,965 sq. ft.

The Basin-C consist of approximately 0.4 acres (17,240 sq. ft.) and shed the water off the south edge of the parking area into the flood plain.

Basin - C	Existing Impervious Area	Proposed Impervious Area
Total Impervious	0	8,637 sq. ft.

Soils Information

Boulder County Soils Report information was mapped by the **Natural Resources Conservation Service (NRCS)**. Soil classification shows the proposed developed area to be Niwot Soils (Nh). The proposed development area soils consist of loam overlying gravely sandy. The Niwot Soils (Nh) classified as a Group B. With the primary soil being a soil Group B, a soil group B was used for the drainage calculations.

Overall Basin Area

The overall basin/ development area evaluated that collects drainage consist of approximately 4.2 acres. The calculated flows rates for the evaluated basin are:

Total Basin 4.2 Acres	2 Year Event	100 Year Event
Existing	0.6 cfs	10.9 cfs
Proposed	2.7 cfs	13.6 cfs

Approximate Maximum Slope = 1.5%; Time of Concentration = 14 minutes.

Flows from the site are dispersed into the North Saint Vrain Creek bordering the properties southern and western boundaries.

On-site Stormwater Flow

Approximately 4.2 acres contribute to the evaluated on-site stormwater flow leaving the proposed developed.

- The property is being viewed as undeveloped for historic flow rates and compared to the proposed current development.

Flood Plain

The North St. Vrain 100 year regulatory floodway as defined by the Flood Insurance Rate Map (FIRM) Map Number 08013C0232J, revised December 18, 2012 extends into the property, approximately 70 to 180 feet, along the southern and western boundaries. The property land area with in the floodway is approximately 1.7 acres. At the current time the only improvements within the flood way are roads, parking and underground utilities. The only additional improvements proposed in the floodwall are sand filter ponds for water quality. All roadways and parking match existing grade with the proposed sand filter ponds recessed into the existing grade. No improvements are proposed that would adversely impact the regulatory floodway.

The property was previously developed as a mobile home park. During the September 2013 flood event, all of the trailer homes were damaged. Since the flood all of the trailers have been removed.

4.0 DESIGN METHODS AND ASSUMPTIONS

4.1 Criteria for Hydrologic Analysis

The method of analysis used for determining peak runoff rates was the Rational Method as follows:

$Q = C I A$ where: Q = peak runoff rate in cubic feet per second

C = combined runoff coefficient

I = storm intensity in inches per hour

Intensity was determined for Area III in L.C.SWDS

A = area in acres

Time of concentration for overland flow was calculated using the

following equation: $T = \frac{0.395(1.1 - C_5)L^{1/2}}{S^{1/3}}$ where:

C_5 = the 5-year runoff coefficient

L = length of flow in feet

S = slope in percent

T = Time of concentration in minute

The method of analysis used for determining gravity open channel flow rates was the Manning Equation as follows:

$$V = 1.49/n(A/P)^{.6667} S^{.5}$$

and $Q = VA$ where:

Q = peak runoff rate in cubic feet per second (CFS)

V = velocity (fps)

n = manning number

n = .024 corrugated pipe

n = .013 concrete pipe

A = area (sf)

P = wetted perimeter (ft)

S = slope (ft/ft)

Equation used in calculating orifice flows:

$$V^2 = 2gh \quad \text{where:}$$

V = velocity (fps)

g = acceleration due to gravity (fps²)

runoff producing stor
calculated at 1,900 cu
filtration is to be achie
media to an under dra
is to have the sides s
stormwater overflow w
Basin-B stormwater is
west side of the main
discharged across the
buffer area before dis
the southern property
undeveloped to appro
existing flow direction
the existing residence
to a sand filter basin
sand filter basins ha
average runoff produc
was calculated at 700
filtration is to be ach
media to an under dra
is to have the sides
stormwater overflow v
Basin-C stormwater is
parking area. The sto
of the basin area to d
into the North Saint V
The impervious area
50%. The stormwater
edge of the highway
residence picking up
sand filter basin along
filter is to be located
the existing grade s
sand filter basin has
runoff producing sto
calculated at 400 cu

h = vertical head (FT)

4.2 Drainage Plan Development

Due to the small project area, the proposed developable area was evaluated as a single basin. The basin was used as basic units for the Rational Method Calculation for peak runoff. The west end of the basins served as design points of interest for the 2-yr, 100-yr flows and calculation of water quality control structures. The results of the hydrologic analysis appear in **Appendix A**.

4.2.1 Detention Basin Design

The proposed developed portion of the River Bend PUD is projected to have an increase flow of 2.1 cfs for the 2 year event and 2.7 cfs for the 100 year event.

Stormwater will discharge into the North St. Vrain Creek along the southern and western property boundaries. A small amount of stormwater will pass through 503 West Main Street property before entering the river. Stormwater passing through 503 West Main will sheet via the historic conveyance route across lawn area, with no adverse impact. 503 West Main will provide an easement for the conveyance of the stormwater across their property. With minimal increase in the stormwater estimated, no adverse impact is anticipated to adjoining property owners and being lower in the drainage basin, no detention is recommended.

4.2.2 Water Quality

Existing Drainage from site currently sheet flows off the property across grass buffers to the North Saint Vrain Creek. For water quality purposes the developed area has been divided into three basins.

Basin-A stormwater exits the site via sheet flow from the lawn area into the North Saint Vrain Creek at the west end of the property. The impervious area will increase from approximately 15% to 40%. The stormwater will follow the existing flow direction from the north half of the property collecting runoff from the driveway, parking and buildings to a sand filter basin at the western tip of the property. The sand filter is to be located within the flood plain and is to be recessed into the existing grade so as to not impact the cross sectional area. The sand filter basins have been sized to collect stormwater from the average

filtration is to be achieved through ground infiltration through a porous media to an under drain. Due to the minimal slope the sand filter basin is to have the sides sodded to match the surrounding lawn area for stormwater overflow when the basin volume is exceeded.

The proposed gravel parking area is to be compacted class 6 aggregate base course to help stabilize the area. Also, minimal grades of 1.5% to 2% across the parking area and roads help minimize runoff velocity reducing scour.

4.2.3 Construction Erosion Control

A majority of the proposed improvements have been incorporated into the site at this time. With further ground disturbance are the following recommendations.

A) BMP's for Stormwater Pollution Prevention

1) Structural Practices

- A silt fence is to be placed along the south and west (downhill) sides of the property where there is disturbed soil.
- Erosion mat is to be installed in the shallow channels with grass seed immediately following construction.

2) Non-Structural Practices

- All slopes are to be returned to their pre-construction grade.
- Disturbed slopes that exceed 30% are to have soil erosion mats installed.
- All areas of disturbance are to be graded so water shall be dispersed into sheet flow and directed off the area of disturbance into existing native vegetation buffer areas.
- Within two weeks of the frost being out of the ground, all disturbed areas are to be sodded or seeded and mulched with native seed. Seeding and mulching is to be as specified in the construction plans on specifications.

B) Final Stabilization and Long Term Stormwater Management

- Stabilization will not be considered final until all surfaced areas have received their final surface; uniform vegetative cover has been established with a density of at least 70% of

pre-disturbance levels or equivalent permanent, physical erosion reduction materials has been employed. Additional erosion control measures may be required upon site inspection for specific operations as conditions warrant.

C) Other Controls

- Off-site tracking of material shall be controlled to minimize the tracking. Streets shall be cleaned when earth materials are tracked, spilled or washed onto the streets as directed by the project engineer. When cleaning streets, they shall not be washed until they have been scraped and swept and inlet protection has been properly installed.

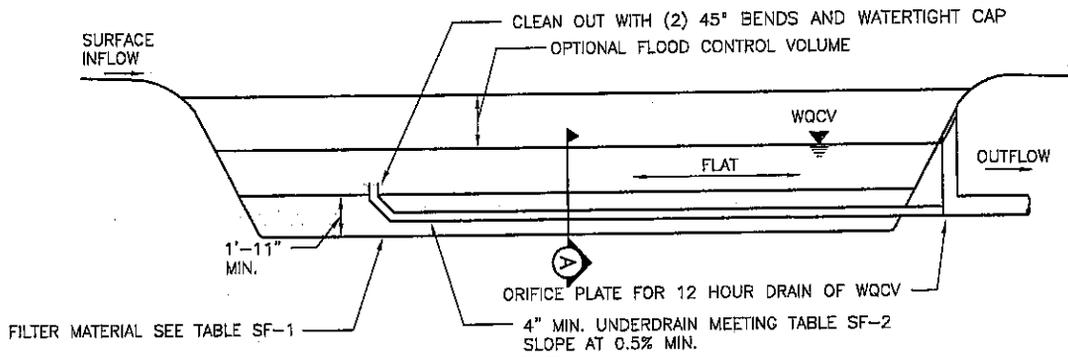
D) Inspection and Maintenance

A Colorado stormwater discharge permit for construction shall be required by the general contractor, if more than 1 acre of disturbance occurs, prior to starting and site disturbance.

- For BMP's to function effectively the project site is to be inspected every 14 days and after any significant storm event that causes erosion, sediment transport or vehicular tracking.
- Specific areas to be inspected are all structural sediment control devices, areas of point source flows onto or off of the sites and the stream banks in areas of excavation.
- General overview of the entire site should be made every 14 days.
- Any deficiencies observed during inspections are to be corrected within five (5) calendar days of observance or prior to any storm event that would cause pollutants to degrade waters of the United States.
- If drainage, erosion or sediment problems become apparent during construction, such as when off-site sedimentation occurs, the BMP's shall be re-evaluated and reimplemented in an effective manner.
- Following each inspection, inspection reports are to be fully executed and placed in a folder.

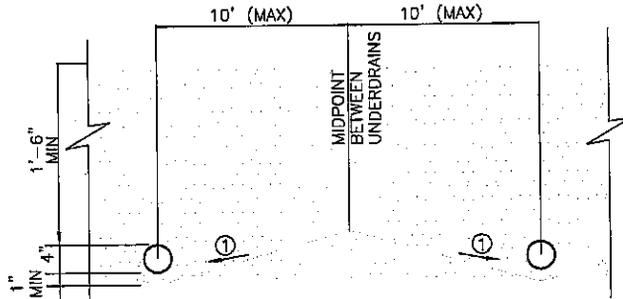
5.0 CONCLUSIONS

The proposed River Bend PUD is projected to have a combined increase stormwater discharge rates of 2.1 cfs, and 2.4 cfs for the 2-year and 100-year storm events. With the property evaluated as undeveloped the Impervious area within the basin will increase by approximate 63,450 ft² (~23%). The developed area of Basin-A flow will discharge off the west end of the property into the North Saint Vrain Creek. Basin-B flow will discharge off the southern side of the property into the North Saint Vrain Creek. Basin-C flow will discharge off the southern side of the property into the North Saint Vrain Creek. Sediment control and water quality is to be obtained from filtration through the sand filter basins located at the end of each basin. Based on minimal increased flow there will be no adverse impact to offsite property, no stormwater detention is recommended.



PROFILE
NTS

NOTE: THIS DETAIL SHOWS A PARTIAL INFILTRATION SECTION. FOR FULL INFILTRATION ELIMINATE UNDERDRAIN AND PROVIDE 1'-6" OF FILTER MATERIAL. FOR NO INFILTRATION PROVIDE IMPERMEABLE MEMBRANE SECURED TO CAST-IN-PLACE CONCRETE WALL. SEE DETAILS SF-2 AND SF-3.

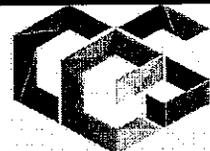


SECTION A
NTS

JOB No: 507.002

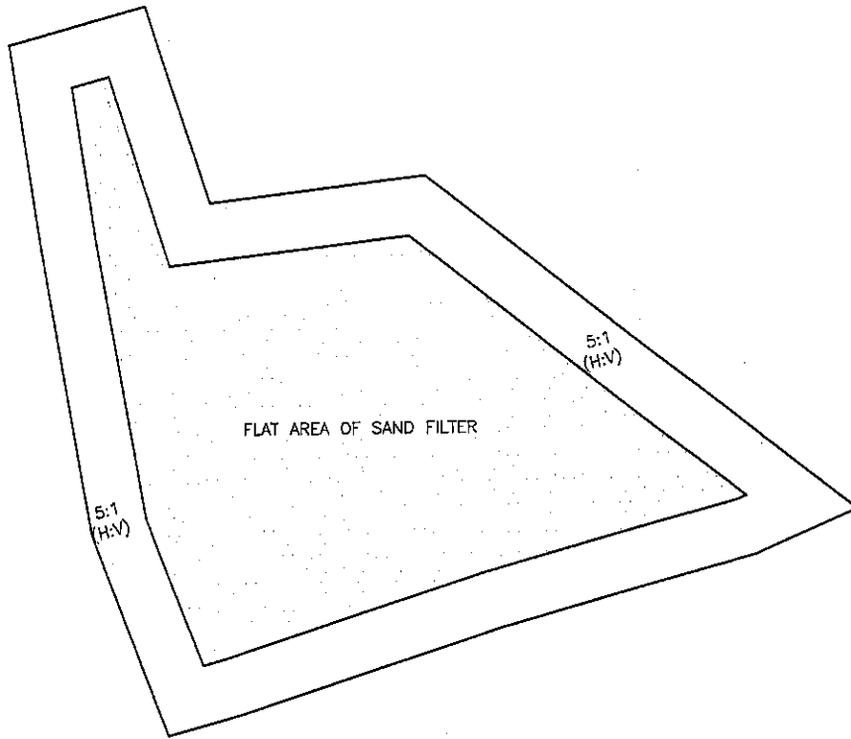
TYPICAL UNDERDRAIN
DETAIL
RIVERBEND PUD
501 WEST MAIN
LYONS, CO 80540

BY: MST DATE: 04/28/2016
FILE: M:\807_002\DRAINAGE\FIGURE Typ-underdrain.DWG

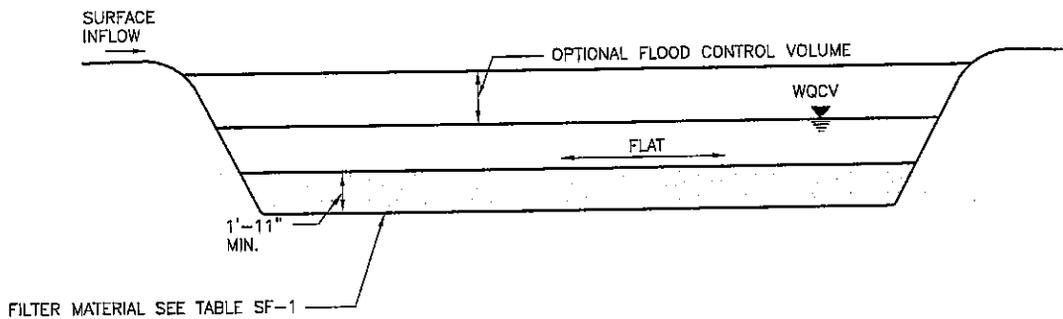


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PLAN
NTS



PROFILE
NTS

SAND FILTER PLAN, PROFILE AND SECTION

JOB No: 807.002

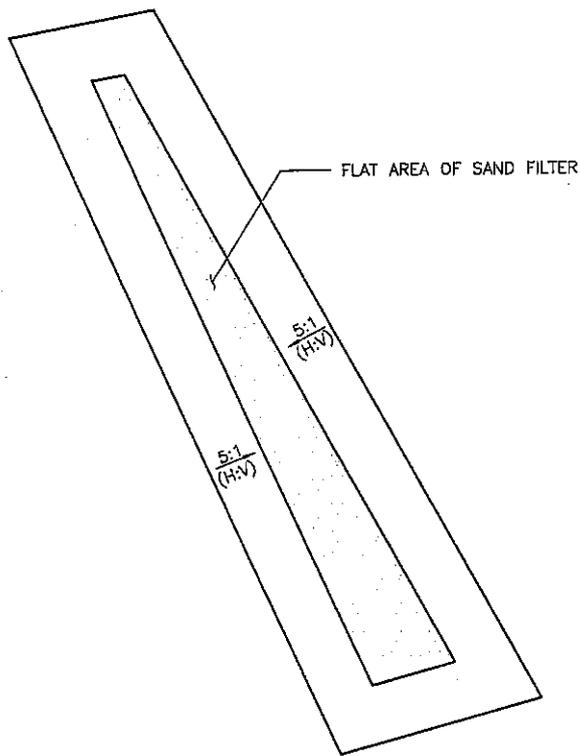
BASIN - A
3.0± ACRES
EXISTING 15% IMPERVIOUS
PROPOSED 39% IMPERVIOUS

**FIGURE 4
BASIN A
SAND FILTER PLAN,
PROFILE AND SECTION**

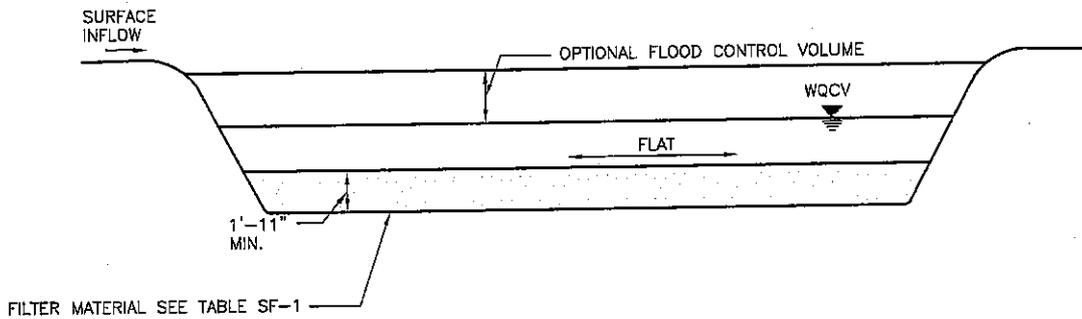
BY: MST DATE: 03/30/2016
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PLAN
NTS



PROFILE
NTS
SAND FILTER PLAN, PROFILE AND SECTION

JOB No: 807.002

BASIN - B
0.6± ACRES
EXISTING 0% IMPERVIOUS
PROPOSED 70% IMPERVIOUS

FIGURE 5
BASIN B
SAND FILTER PLAN,
PROFILE AND SECTION

BY: MST DATE: 03/30/2016

FILE: M:\807_002\Drawings\Figure 4 Sand Filtration.dwg



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Appendix A

Hydrologic Analysis

TABLE 2-1
RAINFALL INTENSITY-DURATION TABLES
LYONS, COLORADO

RETURN PERIOD = 2 YEARS

RETURN PERIOD = 100 YEARS

Duration (min)	Total Depth (in)	Incremental Depth (in)	Design Rain (in)	Intensity (in/hr)	Duration (min)	Total Depth (in)	Incremental Depth (in)	Design Rain (in)	Intensity (in/hr)
10	0.47	0.47	0.06	2.82	10	1.21	1.21	0.18	7.26
20	.68	.21	.09	2.05	20	1.78	0.57	.19	5.34
30	.82	.14	.21	1.64	30	2.12	.34	.57	4.24
40	.91	.09	.47	1.37	40	2.31	.19	1.21	3.47
50	.98	.07	.14	1.18	50	2.50	.19	.034	3.01
60	1.04	.06	.07	1.04	60	2.68	.18	.19	2.68
70	1.08	.04	.04	.093	70	2.81	.13	.13	2.41
80	1.12	.04	.04	.84	80	2.88	.07	.07	2.16
90	1.16	.04	.04	.77	90	2.93	.05	.05	1.96
100	1.20	.04	.04	.72	100	2.98	.05	.05	1.79
110	1.23	.03	.03	.67	110	3.03	.05	.05	1.65
120	1.26	.03	.03	.63	120	3.08	.05	.05	1.54
130	1.29	.03	.03	.59	130	3.13	.05	.05	1.44
140	1.32	.03	.03	.56	140	3.18	.05	.05	1.36
150	1.35	.03	.03	.54	150	3.23	.05	.05	1.29
160	1.37	.02	.02	.51	160	3.28	.05	.05	1.23
170	1.39	.02	.02	.49	170	3.32	.04	.04	1.17
180	1.41	.02	.02	.47	180	3.36	.04	.04	1.12
TOTAL		1.41	1.41		TOTAL		3.36	3.36	

From NOAA Atlas, volume III, Colorado 1973.

Depth-Duration-Frequency and Intensity-Duration-Frequency Tables for Colorado Hydrologic Zones 1 through 4

Blue cells are inputs.

Project: 501 West Main Street, Lyons Colorado

Where is the Watershed Located?

Located within UDFCD Boundary

Located outside of UDFCD Boundary

Hydrologic Zone (1, 2, 3, or 4) = (see map)

Elevation at Center of Watershed = ft

Watershed Area (Optional) = sq. mi.

(Optional) Select a location within the UDFCD boundary:

Longitude: 39° 55' 57" Latitude: 105° 17' 37" W

1. Rainfall Depth-Duration-Frequency Table

If within the UDFCD Boundary, Enter the 1-hour and 6-hour rainfall depths from the USDCM Volume 1.
Otherwise, Enter the 6-hour and 24-hour rainfall depths from the NOAA Atlas 2 Volume III.

Return Period	Rainfall Depth in Inches at Time Duration								
	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	24-hr
2-yr	0.28	0.45	0.57	0.66	1.00	1.21	1.36	1.60	N/A
5-yr	0.40	0.64	0.81	0.93	1.42	1.62	1.77	2.00	N/A
10-yr	0.48	0.77	0.96	1.11	1.70	1.94	2.12	2.40	N/A
25-yr	0.56	0.89	1.12	1.29	1.97	2.32	2.58	3.00	N/A
50-yr	0.68	1.08	1.36	1.57	2.40	2.74	3.00	3.40	N/A
100-yr	0.73	1.16	1.46	1.69	2.57	2.99	3.30	3.80	N/A
500-yr	0.92	1.47	1.85	2.13	3.25	3.75	4.12	4.71	N/A

Note: Refer to Figures 4-1 through 4-12 of USDCM Volume 1 for 1-hr and 6-hr rainfall depths.

Refer to NOAA Atlas 2 Volume III isopleth maps for 6-hr and 24-hr rainfall depths.

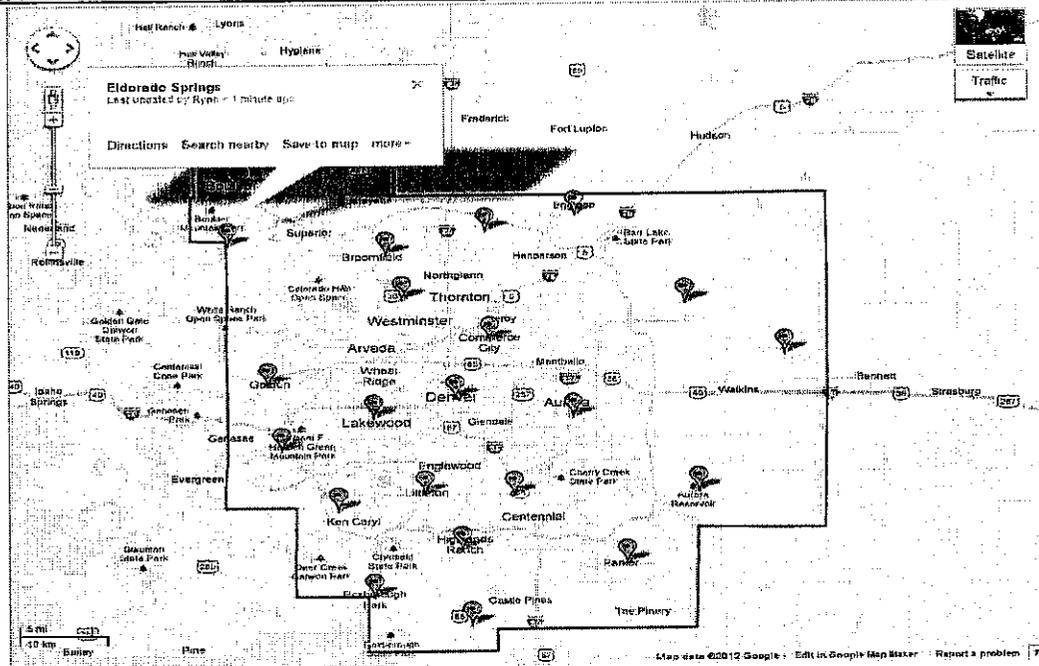
Rainfall depths for durations less than 1-hr are calculated using Equation 4-4 in USDCM Volume 1.

2. Rainfall Intensity-Duration-Frequency Table

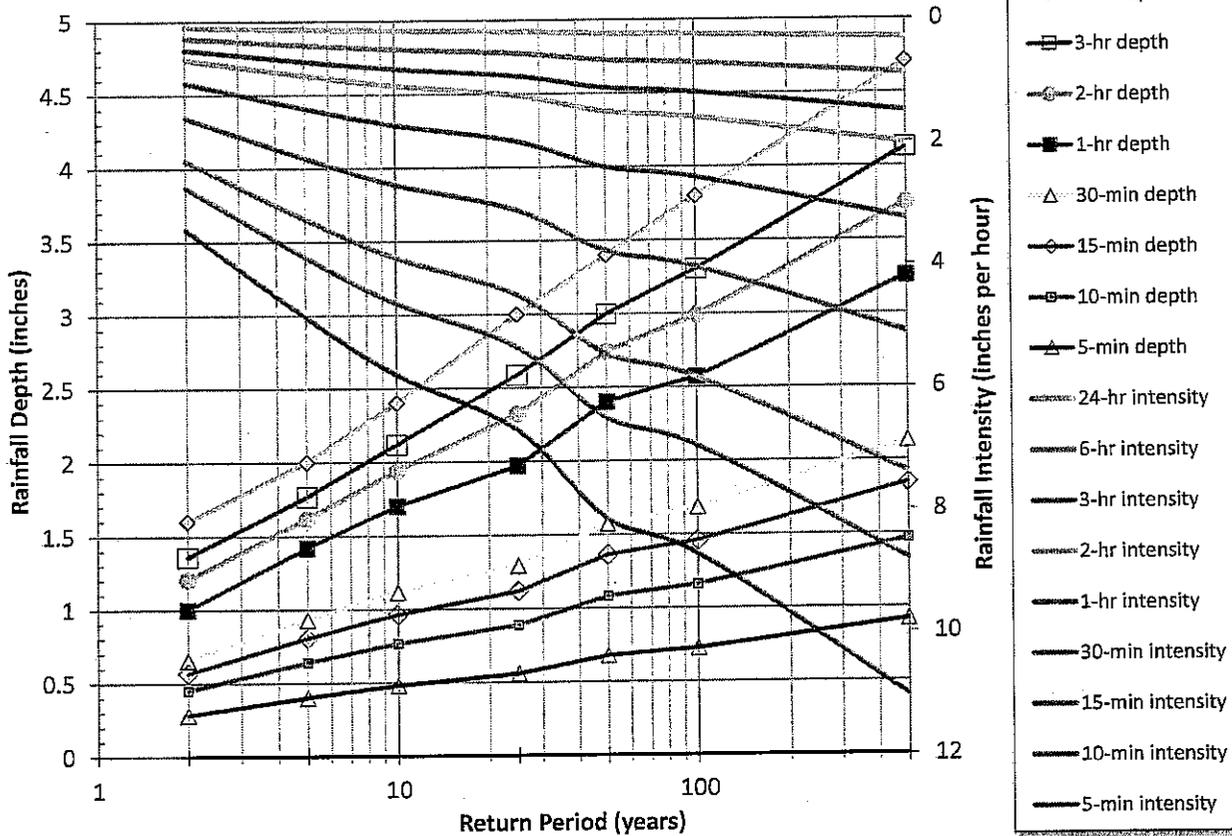
Return Period	Rainfall Intensity in Inches Per Hour at Time Duration								
	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	24-hr
2-yr	3.39	2.71	2.27	1.57	1.00	0.62	0.46	0.27	0.09
5-yr	4.82	3.84	3.22	2.23	1.42	0.88	0.65	0.39	0.13
10-yr	5.77	4.60	3.86	2.67	1.70	1.06	0.78	0.46	0.16
25-yr	6.68	5.33	4.47	3.09	1.97	1.22	0.91	0.54	0.18
50-yr	8.14	6.49	5.45	3.77	2.40	1.49	1.11	0.66	0.22
100-yr	8.72	6.95	5.83	4.03	2.57	1.60	1.18	0.70	0.24
500-yr	11.03	8.80	7.38	5.10	3.25	2.02	1.50	0.89	0.30

Note: Intensity approximated using 1-hr rainfall depths and Equation 4-3 in USDCM Volume 1.

Depth-Duration-Frequency and Intensity-Duration-Frequency Tables for Colorado Hydrologic Zones 1 through 4



Design Rainfall IDF & DDF Chart



Full Basin
Evaluated 2yr Historic

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Full Basin Evaluated 2yr- Historic

I. Catchment Hydrologic Data

Catchment ID = Historic
 Area = 4.20 Acres
 Percent Imperviousness = 11.00 %
 NRCS Soil Type = B A, B, C, or D

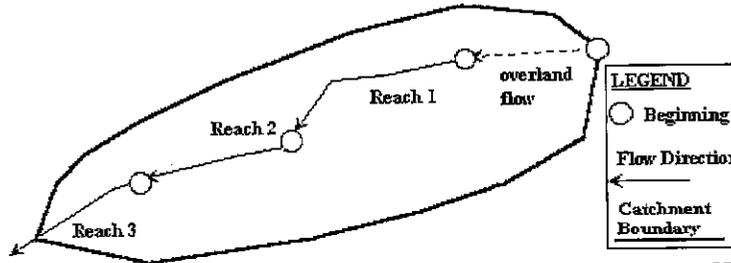
II. Rainfall Information I (inch/hr) = $C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 2 years (input return period for design storm)
 $C1$ = 28.50 (input the value of C1)
 $C2$ = 10.00 (input the value of C2)
 $C3$ = 0.786 (input the value of C3)
 $P1$ = 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.06
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5$ = 0.14
 Override 5-yr. Runoff Coefficient, $C-5$ = _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey- ance input	Flow Velocity V fps output	Flow Time T _f minutes output
Overland	0.4200	145	0.14	N/A	0.40	6.06
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				

Computed T_c = 16.12
 Regional T_c = 13.58
 User-Entered T_c = 13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 2.28 inch/hr
 Rainfall Intensity at Regional T_c, I = 2.47 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 2.47 inch/hr

Peak Flowrate, Q_p = 0.56 cfs
 Peak Flowrate, Q_p = 0.81 cfs
 Peak Flowrate, Q_p = 0.61 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Full Basin Evaluated 2yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 4.20 Acres
 Percent Imperviousness = 45.00 %
 NRCS Soil Type = B A, B, C, or D

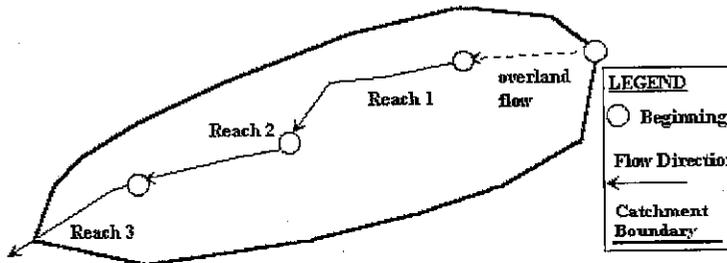
II. Rainfall Information $I \text{ (inch/hr)} = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, $T_r =$ 2 years (input return period for design storm)
 $C1 =$ 28.50 (input the value of C1)
 $C2 =$ 10.00 (input the value of C2)
 $C3 =$ 0.786 (input the value of C3)
 $P1 =$ 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, $C =$ 0.26
 Override Runoff Coefficient, $C =$ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5 =$ 0.32
 Override 5-yr. Runoff Coefficient, $C =$ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Conveyance input	Flow Velocity V fps output	Flow Time T _f minutes output
Overland	0.4200	145	0.32	N/A	0.49	4.92
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				

Computed T_c = 14.99
 Regional T_c = 13.58
 User-Entered T_c = 13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, $I =$ 2.36 inch/hr
 Rainfall Intensity at Regional T_c, $I =$ 2.47 inch/hr
 Rainfall Intensity at User-Defined T_c, $I =$ 2.47 inch/hr

Peak Flowrate, $Q_p =$ 2.61 cfs
 Peak Flowrate, $Q_p =$ 2.73 cfs
 Peak Flowrate, $Q_p =$ 2.73 cfs

Full Basin Evaluated
100yr - Historic

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Full Basin Evaluated 100yr- Historic

I. Catchment Hydrologic Data

Catchment ID = Historic
 Area = 4.20 Acres
 Percent Imperviousness = 11.00 %
 NRCS Soil Type = B A, B, C, or D

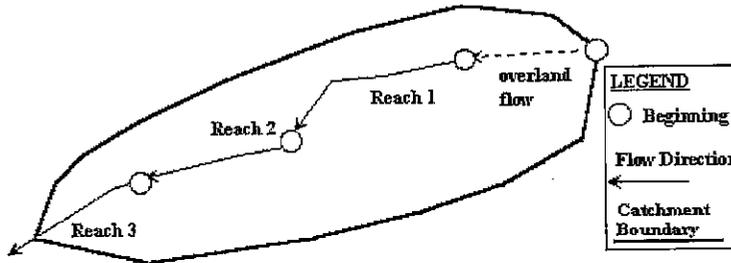
II. Rainfall Information $I \text{ (inch/hr)} = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, $T_r =$ 100 years (input return period for design storm)
 $C1 =$ 28.50 (input the value of C1)
 $C2 =$ 10.00 (input the value of C2)
 $C3 =$ 0.786 (input the value of C3)
 $P1 =$ 2.68 inches (Input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, $C =$ 0.41
 Override Runoff Coefficient, $C =$ _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5 =$ 0.14
 Override 5-yr. Runoff Coefficient, $C =$ _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Conveyance input	Flow Velocity V fps output	Flow Time T _f minutes output
Overland	0.4200	145	0.14	N/A	0.40	6.06
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				

Computed T_c = 16.12
 Regional T_c = 13.58
 User-Entered T_c = 13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, $I =$ 5.88 inch/hr
 Rainfall Intensity at Regional T_c, $I =$ 6.37 inch/hr
 Rainfall Intensity at User-Defined T_c, $I =$ 6.37 inch/hr

Peak Flowrate, $Q_p =$ 10.07 cfs
 Peak Flowrate, $Q_p =$ 10.91 cfs
 Peak Flowrate, $Q_p =$ 10.91 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Full Basin Evaluated 100yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 4.20 Acres
 Percent Imperviousness = 45.00 %
 NRCS Soil Type = B A, B, C, or D

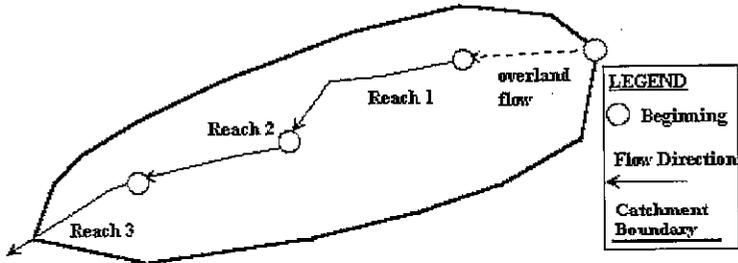
II. Rainfall Information $I \text{ (inch/hr)} = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, $T_r =$ 100 years (input return period for design storm)
 $C1 =$ 28.50 (input the value of C1)
 $C2 =$ 10.00 (input the value of C2)
 $C3 =$ 0.786 (input the value of C3)
 $P1 =$ 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, $C =$ 0.51
 Override Runoff Coefficient, $C =$ _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5 =$ 0.32
 Override 5-yr. Runoff Coefficient, $C =$ _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff C-5	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
	input	input	output	input	output	output
Overland	0.4200	145	0.32	N/A	0.49	4.92
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				

Computed T_c = 14.99
 Regional T_c = 13.58
 User-Entered T_c = 13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, $I =$ 6.09 inch/hr
 Rainfall Intensity at Regional T_c, $I =$ 6.37 inch/hr
 Rainfall Intensity at User-Defined T_c, $I =$ 6.37 inch/hr

Peak Flowrate, $Q_p =$ 13.01 cfs
 Peak Flowrate, $Q_p =$ 13.62 cfs
 Peak Flowrate, $Q_p =$ 13.62 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin A 2yr- Historic

I. Catchment Hydrologic Data

Catchment ID = Historic
 Area = 3.00 Acres
 Percent Imperviousness = 15.00 %
 NRCS Soil Type = B A, B, C, or D

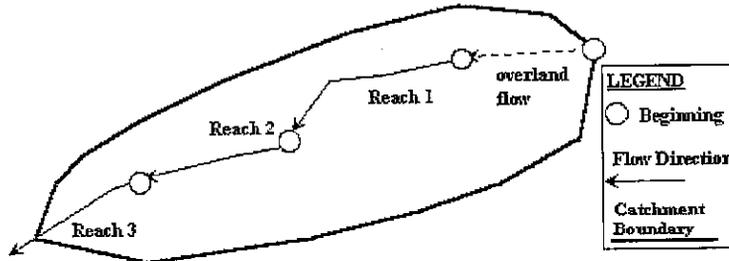
II. Rainfall Information I (inch/hr) = $C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 2 years (input return period for design storm)
 $C1$ = 28.50 (input the value of C1)
 $C2$ = 10.00 (input the value of C2)
 $C3$ = 0.786 (input the value of C3)
 $P1$ = 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.08
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5$ = 0.17
 Override 5-yr. Runoff Coefficient, $C-5$ = _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff	NRCS Conveyance	Flow Velocity V	Flow Time T _f
			C-5 input		fps output	minutes output
Overland	0.4200	145	0.17	N/A	0.41	5.90
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				
Computed T _c =						15.96
Regional T _c =						13.58
User-Entered T _c =						13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 2.29 inch/hr
 Rainfall Intensity at Regional T_c, I = 2.47 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 2.47 inch/hr

Peak Flowrate, Q_p = 0.56 cfs
 Peak Flowrate, Q_p = 0.61 cfs
 Peak Flowrate, Q_p = 0.61 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin A 2yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 3.00 Acres
 Percent Imperviousness = 39.00 %
 NRCS Soil Type = B, A, B, C, or D

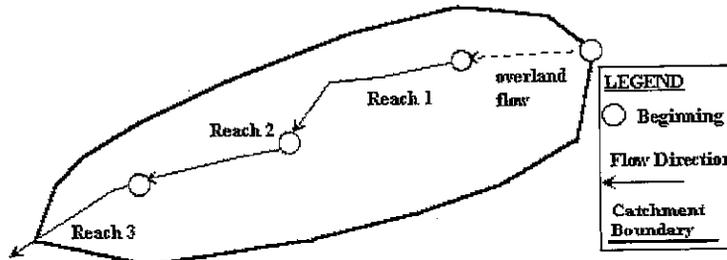
II. Rainfall Information $I (\text{inch/hr}) = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 2 years (input return period for design storm)
 C1 = 28.50 (input the value of C1)
 C2 = 10.00 (input the value of C2)
 C3 = 0.786 (input the value of C3)
 P1 = 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.23
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, C-5 = 0.29
 Override 5-yr. Runoff Coefficient, C = _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff C-5	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
	input	input	output	input	output	output
Overland	0.4200	145	0.29	N/A	0.47	5.12
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				

Computed T_c = 15.18
 Regional T_c = 13.58
 User-Entered T_c = 13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 2.35 inch/hr
 Rainfall Intensity at Regional T_c, I = 2.47 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 2.47 inch/hr

Peak Flowrate, Q_p = 1.60 cfs
 Peak Flowrate, Q_p = 1.69 cfs
 Peak Flowrate, Q_p = 1.69 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin A 100yr- Historic

I. Catchment Hydrologic Data

Catchment ID = Historic
 Area = 3.00 Acres
 Percent Imperviousness = 15.00 %
 NRCS Soil Type = B A, B, C, or D

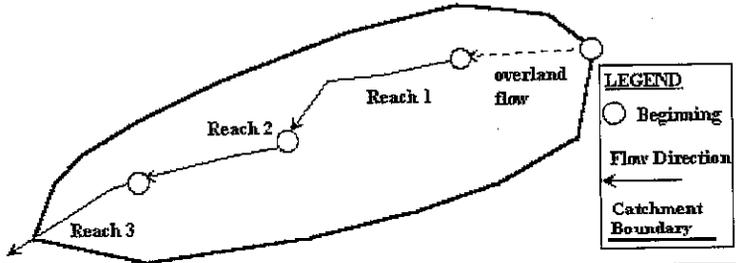
II. Rainfall Information I (inch/hr) = $C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 100 years (input return period for design storm)
 $C1$ = 28.50 (input the value of C1)
 $C2$ = 10.00 (input the value of C2)
 $C3$ = 0.786 (input the value of C3)
 $P1$ = 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.42
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5$ = 0.17
 Override 5-yr. Runoff Coefficient, C = _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff C-5	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
	input	input	output	input	output	output
Overland	0.4200	145	0.17	N/A	0.41	5.90
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				

Computed T_c = 15.96
 Regional T_c = 13.58
 User-Entered T_c = 13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 5.91 inch/hr
 Rainfall Intensity at Regional T_c, I = 6.37 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 6.37 inch/hr

Peak Flowrate, Q_p = 7.51 cfs
 Peak Flowrate, Q_p = 8.10 cfs
 Peak Flowrate, Q_p = 8.10 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin A 100yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 3.00 Acres ✓
 Percent Imperviousness = 39.00 % ✓
 NRCS Soil Type = B A, B, C, or D

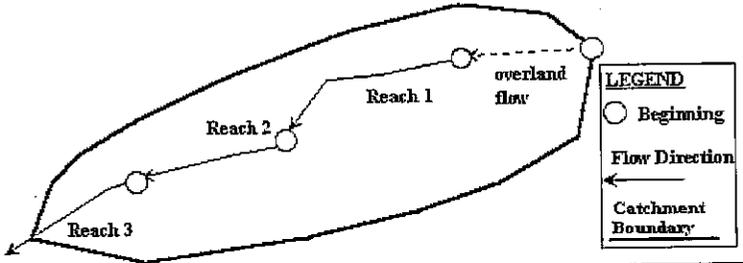
II. Rainfall Information $I \text{ (inch/hr)} = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, $T_r =$ 100 years (input return period for design storm)
 $C1 =$ 28.50 (input the value of C1)
 $C2 =$ 10.00 (input the value of C2)
 $C3 =$ 0.786 (input the value of C3)
 $P1 =$ 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, $C =$ 0.49
 Override Runoff Coefficient, $C =$ _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5 =$ 0.29
 Override 5-yr. Runoff Coefficient, $C-5 =$ _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff C-5	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
	input	input	output	input	output	output
Overland	0.4200	145	0.29	N/A	0.47	5.12
1	0.0140	500		7.00	0.83	10.06
2						
3						
4						
5						
Sum		645				

Computed T_c = 15.18
 Regional T_c = 13.58
 User-Entered T_c = 13.58

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, $I =$ 6.05 inch/hr
 Rainfall Intensity at Regional T_c, $I =$ 6.37 inch/hr
 Rainfall Intensity at User-Defined T_c, $I =$ 6.37 inch/hr

Peak Flowrate, $Q_p =$ 8.94 cfs
 Peak Flowrate, $Q_p =$ 9.41 cfs
 Peak Flowrate, $Q_p =$ 9.41 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin B 2yr- Historic

I. Catchment Hydrologic Data

Catchment ID = Historic
 Area = 0.80 Acres
 Percent Imperviousness = 0.00 %
 NRCS Soil Type = B A, B, C, or D

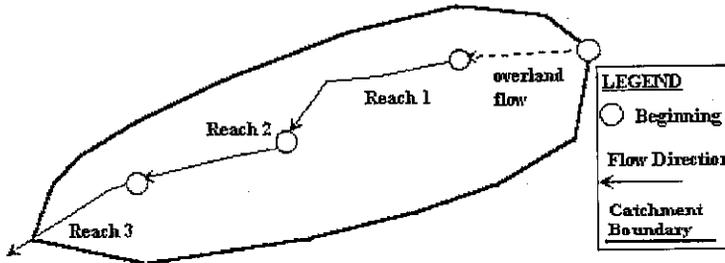
II. Rainfall Information $I \text{ (inch/hr)} = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, $T_r =$ 2 years (input return period for design storm)
 $C1 =$ 28.50 (input the value of C1)
 $C2 =$ 10.00 (input the value of C2)
 $C3 =$ 0.786 (input the value of C3)
 $P1 =$ 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, $C =$ 0.02
 Override Runoff Coefficient, $C =$ _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5 =$ 0.08
 Override 5-yr. Runoff Coefficient, $C =$ _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff		NRCS Conveyance	Flow Velocity V fps		Flow Time T _f minutes
			input	output		input	output	
Overland	0.0400	128		0.08	N/A	0.16	13.25	
1	0.0100	191			10.00	1.00	3.18	
2								
3								
4								
5								
Sum		319						

Computed T_c = 16.43
 Regional T_c = 11.77
 User-Entered T_c = 11.77

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, $I =$ 2.26 inch/hr
 Rainfall Intensity at Regional T_c, $I =$ 2.63 inch/hr
 Rainfall intensity at User-Defined T_c, $I =$ 2.63 inch/hr

Peak Flowrate, $Q_p =$ 0.04 cfs
 Peak Flowrate, $Q_p =$ 0.04 cfs
 Peak Flowrate, $Q_p =$ 0.04 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin B 2yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 0.80 Acres
 Percent Imperviousness = 66.00 %
 NRCS Soil Type = B A, B, C, or D

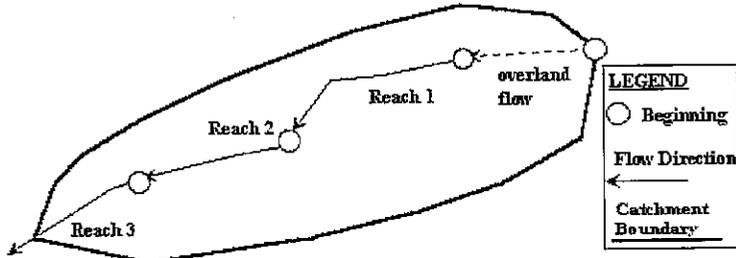
II. Rainfall Information $I (\text{inch/hr}) = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 2 years (input return period for design storm)
 $C1$ = 28.50 (input the value of C1)
 $C2$ = 10.00 (input the value of C2)
 $C3$ = 0.786 (input the value of C3)
 $P1$ = 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.42
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5$ = 0.46
 Override 5-yr. Runoff Coefficient, $C-5$ = _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff		NRCS Conveyance	Flow Velocity V		Flow Time T _f minutes
			input	output		input	output	
Overland	0.0400	128		0.46	N/A	0.26	8.31	
1	0.0100	191			10.00	1.00	3.18	
2								
3								
4								
5								
Sum		319						

Computed T_c = 11.49
 Regional T_c = 11.77
 User-Entered T_c = 11.49

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 2.66 inch/hr
 Rainfall Intensity at Regional T_c, I = 2.63 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 2.66 inch/hr

Peak Flowrate, Q_p = 0.89 cfs
 Peak Flowrate, Q_p = 0.88 cfs
 Peak Flowrate, Q_p = 0.89 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin B 100yr- Historic

I. Catchment Hydrologic Data

Catchment ID = Historic
 Area = 0.80 Acres
 Percent Imperviousness = 0.00 %
 NRCS Soil Type = B A, B, C, or D

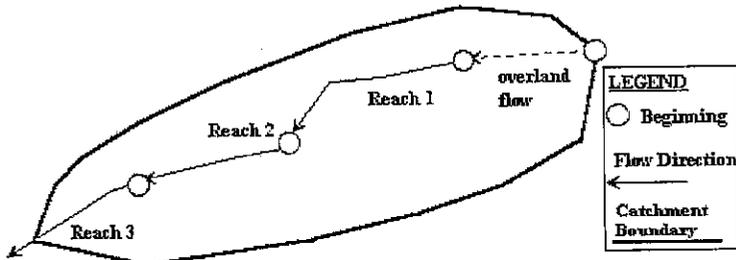
II. Rainfall Information $I \text{ (inch/hr)} = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, $T_r =$ 100 years (input return period for design storm)
 $C1 =$ 28.50 (input the value of C1)
 $C2 =$ 10.00 (input the value of C2)
 $C3 =$ 0.786 (input the value of C3)
 $P1 =$ 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, $C =$ 0.35
 Override Runoff Coefficient, $C =$ _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5 =$ 0.08
 Override 5-yr. Runoff Coefficient, $C =$ _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Conveyance input	Flow Velocity V fps output	Flow Time T _f minutes output
Overland	0.0400	128	0.08	N/A	0.16	13.25
1	0.0100	191		10.00	1.00	3.18
2						
3						
4						
5						
Sum		319				

Computed T_c = 16.43
 Regional T_c = 11.77
 User-Entered T_c = 11.77

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, $I =$ 5.82 inch/hr
 Rainfall Intensity at Regional T_c, $I =$ 6.78 inch/hr
 Rainfall Intensity at User-Defined T_c, $I =$ 6.78 inch/hr

Peak Flowrate, $Q_p =$ 1.63 cfs
 Peak Flowrate, $Q_p =$ 1.90 cfs
 Peak Flowrate, $Q_p =$ 1.90 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin B 100yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 0.80 Acres
 Percent Imperviousness = 66.00 %
 NRCS Soil Type = B A, B, C, or D

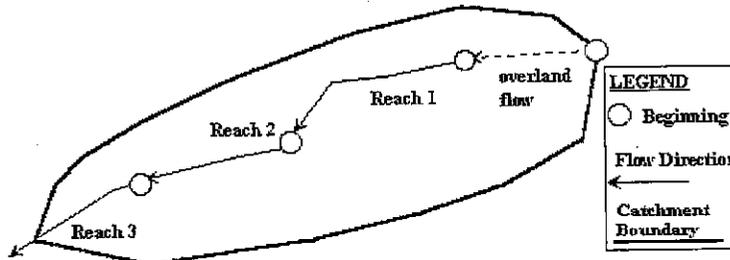
II. Rainfall Information I (inch/hr) = $C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 100 years (input return period for design storm)
 $C1$ = 28.50 (Input the value of $C1$)
 $C2$ = 10.00 (Input the value of $C2$)
 $C3$ = 0.786 (input the value of $C3$)
 $P1$ = 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.60
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C .)
 5-yr. Runoff Coefficient, $C-5$ = 0.46
 Override 5-yr. Runoff Coefficient, $C-5$ = _____ (enter an override $C-5$ value if desired, or leave blank to accept calculated $C-5$.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	6	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff C-5	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
	input	input	output	input	output	output
Overland	0.0400	128	0.46	N/A	0.26	8.31
1	0.0100	191		10.00	1.00	3.18
2						
3						
4						
5						
	Sum	319				

Computed T_c = 11.49
 Regional T_c = 11.77
 User-Entered T_c = 11.49

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 6.85 inch/hr
 Rainfall Intensity at Regional T_c, I = 6.78 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 6.85 inch/hr

Peak Flowrate, Q_p = 3.26 cfs
 Peak Flowrate, Q_p = 3.23 cfs
 Peak Flowrate, Q_p = 3.26 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin C 2 yr- Historic

I. Catchment Hydrologic Data

Catchment ID = Historic
 Area = 0.40 Acres
 Percent Imperviousness = 0.00 %
 NRCS Soil Type = B A, B, C, or D

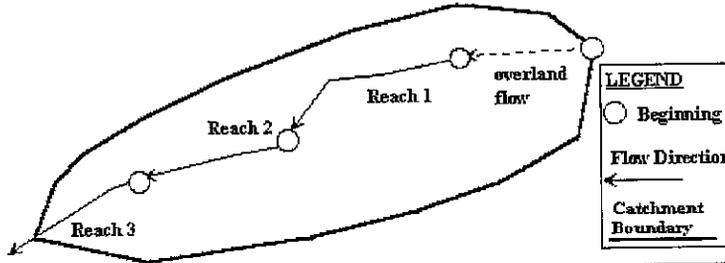
II. Rainfall Information $I \text{ (inch/hr)} = C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 2 years (input return period for design storm)
 $C1$ = 28.50 (input the value of C1)
 $C2$ = 10.00 (input the value of C2)
 $C3$ = 0.786 (input the value of C3)
 $P1$ = 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.02
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C.)
 5-yr. Runoff Coefficient, $C-5$ = 0.08
 Override 5-yr. Runoff Coefficient, C = _____ (enter an override C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
			C-5 input			
Overland	0.0800	93	0.08	N/A	0.17	8.99
1	0.0180	163		7.00	0.94	2.89
2						
3						
4						
5						
Sum		256				

Computed T_c = 11.88
 Regional T_c = 11.42
 User-Entered T_c = 11.42

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 2.62 inch/hr
 Rainfall Intensity at Regional T_c, I = 2.67 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 2.67 inch/hr

Peak Flowrate, Q_p = 0.02 cfs
 Peak Flowrate, Q_p = 0.02 cfs
 Peak Flowrate, Q_p = 0.02 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin C 2 yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 0.40 Acres
 Percent Imperviousness = 50.00 %
 NRCS Soil Type = B A, B, C, or D

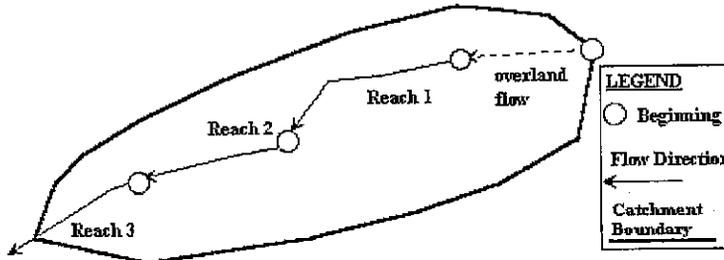
II. Rainfall Information I (inch/hr) = $C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 2 years (input return period for design storm)
 $C1$ = 28.50 (input the value of $C1$)
 $C2$ = 10.00 (input the value of $C2$)
 $C3$ = 0.786 (input the value of $C3$)
 $P1$ = 1.04 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.29
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C .)
 5-yr. Runoff Coefficient, $C-5$ = 0.35
 Override 5-yr. Runoff Coefficient, C = _____ (enter an override $C-5$ value if desired, or leave blank to accept calculated $C-5$.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff C-5	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
	input	input	output	input	output	output
Overland	0.0800	93	0.35	N/A	0.24	6.58
1	0.0180	163		10.00	1.34	2.02
2						
3						
4						
5						
		Sum	256			

Computed T_c = 8.60
 Regional T_c = 11.42
 User-Entered T_c = 8.60

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 2.98 inch/hr
 Rainfall Intensity at Regional T_c, I = 2.67 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 2.98 inch/hr

Peak Flowrate, Q_p = 0.35 cfs
 Peak Flowrate, Q_p = 0.31 cfs
 Peak Flowrate, Q_p = 0.35 cfs

Basin @ 100yr
Developed

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: River Bend PUD
 Catchment ID: Basin C 100yr- Developed

I. Catchment Hydrologic Data

Catchment ID = Developed
 Area = 0.40 Acres
 Percent Imperviousness = 50.00 %
 NRCS Soil Type = B A, B, C, or D

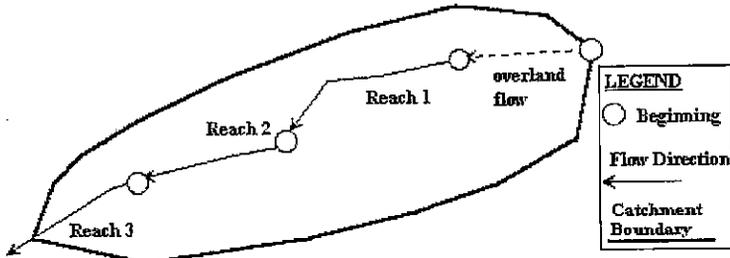
II. Rainfall Information I (inch/hr) = $C1 * P1 / (C2 + Td)^{C3}$

Design Storm Return Period, T_r = 100 years (input return period for design storm)
 $C1$ = 28.50 (input the value of $C1$)
 $C2$ = 10.00 (input the value of $C2$)
 $C3$ = 0.786 (input the value of $C3$)
 $P1$ = 2.68 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.52
 Override Runoff Coefficient, C = _____ (enter an override C value if desired, or leave blank to accept calculated C .)
 5-yr. Runoff Coefficient, $C-5$ = 0.35
 Override 5-yr. Runoff Coefficient, C = _____ (enter an override $C-5$ value if desired, or leave blank to accept calculated $C-5$.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/Field	Short Pasture/Lawns	Nearly Bare Ground	Grassed Swales/Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft	Length L ft	5-yr Runoff Coeff C-5	NRCS Conveyance	Flow Velocity V fps	Flow Time T _f minutes
	input	input	output	input	output	output
Overland	0.0800	93	0.35	N/A	0.24	6.58
1	0.0180	163		10.00	1.34	2.02
2						
3						
4						
5						
Sum		256				

Computed T_c = 8.60
 Regional T_c = 11.42
 User-Entered T_c = 8.60

IV. Peak Runoff Prediction

Rainfall Intensity at Computed T_c, I = 7.68 inch/hr
 Rainfall Intensity at Regional T_c, I = 6.87 inch/hr
 Rainfall Intensity at User-Defined T_c, I = 7.68 inch/hr

Peak Flowrate, Q_p = 1.61 cfs
 Peak Flowrate, Q_p = 1.44 cfs
 Peak Flowrate, Q_p = 1.61 cfs

Appendix B
Water Quality Control Volume

Design Procedure Form: BMP Selection Tool

Sheet 1 of 1

Designer: Michael Todd
Company: Cornerstone Engineering & Surveying, Inc.
Date: April 27, 2016
Project: River Bend PUD, 501 W. Main, Lyons Colorado
Location: Basin A

1. To identify potential BMPs, what best describes the type of site?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input checked="" type="radio"/> Conventional Sites <input type="radio"/> Highly Urbanized Sites <input type="radio"/> Linear Construction In Urbanized Areas </div> <div style="text-align: right; margin-top: 10px;">SKIP # 2</div>							
2. Does the typical section include a parking lane, shoulder, median, or otherwise allow for surface BMPs?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input type="radio"/> YES <input type="radio"/> NO </div>							
3. Is the site comprised of Hydrologic Soil Group A or B soils?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input checked="" type="radio"/> YES <input type="radio"/> NO </div>							
4. Is the tributary impervious area ¹ greater than 1 acre?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input checked="" type="radio"/> YES <input type="radio"/> NO </div>							
5. Is the depth of bedrock greater than 5 feet?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input checked="" type="radio"/> YES <input type="radio"/> NO </div>							
6. Is the tributary impervious area ¹ greater than 5 acres?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input type="radio"/> YES <input checked="" type="radio"/> NO </div> <div style="text-align: right; margin-top: 10px;">SKIP # 7</div>							
7. Is a water source available for use? (baseflow or groundwater)	<div style="border: 1px solid black; padding: 5px;"> Choose One <input type="radio"/> YES <input type="radio"/> NO </div>							
8. Is the BMP in a developing watershed?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input type="radio"/> YES <input checked="" type="radio"/> NO </div> <div style="text-align: right; margin-top: 10px;">SKIP # 9-10</div>							
9. Are BMPs allowed in the right-of-way?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input type="radio"/> YES <input type="radio"/> NO </div>							
10. Does the community have an established Fee in Lieu Program in place?	<div style="border: 1px solid black; padding: 5px;"> Choose One <input type="radio"/> YES <input type="radio"/> NO </div>							
11. Step 1 of Four Step Process: MDCIA / Volume Reduction (Not WQCV) BMPs	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Grass Swale</td></tr> <tr><td>Grass Buffer</td></tr> <tr><td>Permeable Pavement- Full Infiltration (5,6)</td></tr> <tr><td>Green Roof (3,6)</td></tr> <tr><td> </td></tr> </table>	Grass Swale	Grass Buffer	Permeable Pavement- Full Infiltration (5,6)	Green Roof (3,6)			
Grass Swale								
Grass Buffer								
Permeable Pavement- Full Infiltration (5,6)								
Green Roof (3,6)								
12. Step 2 of Four Step Process: WQCV BMPs	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Permeable Pavement- Full Infiltration (5,6)</td></tr> <tr><td>Bioretention- Full Infiltration (5,6)</td></tr> <tr><td>Extended Dry Detention Basin</td></tr> <tr><td>Sand Filter Extended Detention- Full Infiltration (5)</td></tr> <tr><td>Green Roof (3,6)</td></tr> <tr><td>Regional Water Quality Treatment (4)</td></tr> <tr><td> </td></tr> </table>	Permeable Pavement- Full Infiltration (5,6)	Bioretention- Full Infiltration (5,6)	Extended Dry Detention Basin	Sand Filter Extended Detention- Full Infiltration (5)	Green Roof (3,6)	Regional Water Quality Treatment (4)	
Permeable Pavement- Full Infiltration (5,6)								
Bioretention- Full Infiltration (5,6)								
Extended Dry Detention Basin								
Sand Filter Extended Detention- Full Infiltration (5)								
Green Roof (3,6)								
Regional Water Quality Treatment (4)								
Notes: <u>1. 'Tributary impervious area' refers to the impervious area draining to the BMP, not the total area of the project site.</u>								
<u>3. In the Front Range of Colorado, irrigation, at least periodically in dry times, will be required to sustain a green roof.</u>								
<u>4. If a regional facility will be used to provide the WQCV, some degree of onsite treatment/MDCIA will still likely be required.</u>								
<u>5. No Infiltration= underdrain and liner, Partial Infiltration= underdrain and no liner, Full Infiltration= no underdrain and no liner.</u>								
<u>6. Consider this BMP for a portion of your site. It's best suited for impervious tributary areas of approximately one acre or less.</u>								

Design Procedure Form: Sand Filter (SF)

Designer: Michael Todd
 Company: Cornerstone Engineering & Sureying, Inc.
 Date: April 27, 2016
 Project: River Bend PUD, 501 West Main, Lyons, Colorado
 Location: Basin A

1. Basin Storage Volume

- A) Effective Imperviousness of Tributary Area, I_e
(100% if all paved and roofed areas upstream of sand filter)
- B) Tributary Area's Imperviousness Ratio ($i = I_e/100$)
- C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time
 $WQCV = 0.9 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i)$
- D) Contributing Watershed Area (including sand filter area)
- E) Water Quality Capture Volume (WQCV) Design Volume
 $V_{WQCV} = WQCV / 12 * Area$
- F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm
- G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
- H) User Input of Water Quality Capture Volume (WQCV) Design Volume
(Only if a different WQCV Design Volume is desired)

$I_e =$ 39.0 %
 $i =$ 0.390
 WQCV = 0.16 watershed inches
 Area = 130,041 sq ft
 $V_{WQCV} =$ 1,728 cu ft
 $d_e =$ 0.43 in
 $V_{WQCV OTHER} =$ 1,728 cu ft
 $V_{WQCV USER} =$ 1,900 cu ft

2. Basin Geometry

- A) WQCV Depth
- B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.
- C) Minimum Filter Area (Flat Surface Area)
- D) Actual Filter Area
- E) Volume Provided

$D_{WQCV} =$ 1.0 ft
 $Z =$ 5.00 ft / ft
 $A_{Min} =$ 634 sq ft
 $A_{Actual} =$ 1512 sq ft
 $V_T =$ 1900 cu ft

3. Filter Material

Choose One
 1.8" CDOT Class B or C Filter Material
 Other (Explain):

4. Underdrain System

- A) Are underdrains provided?
- B) Underdrain system orifice diameter for 12 hour drain time
 - i) Distance From Lowest Elevation of the Storage Volume to the Center of the Orifice
 - ii) Volume to Drain in 12 Hours
 - iii) Orifice Diameter, 3/8" Minimum

Choose One
 YES
 NO
 $y =$ N/A ft
 $Vol_{12} =$ 1,900 cu ft
 $D_o =$ _____ in

Basin A

Design Procedure Form: Sand Filter (SF)

Sheet 2 of 2

Designer: Michael Todd
Company: Cornerstone Engineering & Sureying, Inc.
Date: April 27, 2016
Project: River Bend PUD, 501 West Main, Lyons, Colorado
Location: Basin A

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

A) Is an Impermeable liner provided due to proximity of structures or groundwater contamination?

Choose One
 YES NO

6-7. Inlet / Outlet Works

A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet

Flow into the sand filter will be over low sloping lawn area.

Notes:

Basin "B"

Design Procedure Form: Sand Filter (SF)

Sheet 1 of 2

Designer: Michael Todd
 Company: Cornerstone Engineering & Sureying, Inc.
 Date: April 27, 2016
 Project: River Bend PUD, 501 West Main, Lyons, Colorado
 Location: Basin B

<p>1. Basin Storage Volume</p> <p>A) Effective Imperviousness of Tributary Area, I_e (100% if all paved and roofed areas upstream of sand filter)</p> <p>B) Tributary Area's Imperviousness Ratio ($i = I_e/100$)</p> <p>C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time $WQCV = 0.9 * (0.91 * I^2 - 1.19 * I + 0.78 * I)$</p> <p>D) Contributing Watershed Area (including sand filter area)</p> <p>E) Water Quality Capture Volume (WQCV) Design Volume $V_{WQCV} = WQCV / 12 * Area$</p> <p>F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm</p> <p>G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume</p> <p>H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired)</p>	<p>$I_e =$ <u>66.0</u> %</p> <p>$i =$ <u>0.660</u></p> <p>WQCV = <u>0.23</u> watershed inches</p> <p>Area = <u>34,613</u> sq ft</p> <p>$V_{WQCV} =$ <u>670</u> cu ft</p> <p>$d_s =$ <u>0.43</u> in</p> <p>$V_{WQCV \text{ OTHER}} =$ <u>670</u> cu ft</p> <p>$V_{WQCV \text{ USER}} =$ <u>700</u> cu ft</p>
<p>2. Basin Geometry</p> <p>A) WQCV Depth</p> <p>B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.</p> <p>C) Minimum Filter Area (Flat Surface Area)</p> <p>D) Actual Filter Area</p> <p>E) Volume Provided</p>	<p>$D_{WQCV} =$ <u>1.0</u> ft</p> <p>$Z =$ <u>5.00</u> ft / ft</p> <p>$A_{Min} =$ <u>286</u> sq ft</p> <p>$A_{Actual} =$ <u>290</u> sq ft</p> <p>$V_T =$ <u>700</u> cu ft</p>
<p>3. Filter Material:</p>	<p>Choose One</p> <p><input checked="" type="radio"/> 18" CDOT Class B or C Filter Material</p> <p><input type="radio"/> Other (Explain):</p> <hr/> <hr/>
<p>4. Underdrain System</p> <p>A) Are underdrains provided?</p> <p>B) Underdrain system orifice diameter for 12 hour drain time</p> <p>i) Distance From Lowest Elevation of the Storage Volume to the Center of the Orifice</p> <p>ii) Volume to Drain in 12 Hours</p> <p>iii) Orifice Diameter, 3/8" Minimum</p>	<p>Choose One</p> <p><input checked="" type="radio"/> YES</p> <p><input type="radio"/> NO</p> <p>$y =$ <u>N/A</u> ft</p> <p>$Vol_{12} =$ <u>700</u> cu ft</p> <p>$D_o =$ _____ in</p>

BASM "B"

Design Procedure Form: Sand-Filter (SF)

Sheet 2 of 2

Designer: Michael Todd
Company: Cornerstone Engineering & Sureying, Inc.
Date: April 27, 2016
Project: River Bend PUD, 501 West Main, Lyons, Colorado
Location: Basin B

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

A) Is an impermeable liner provided due to proximity of structures or groundwater contamination?

Choose One
 YES NO

6-7. Inlet / Outlet Works

A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet

Flow into the sand filter will be over low sloping lawn area.

Notes:

Basin "C"

Design Procedure Form: Sand Filter (SF)

Sheet 1 of 2

Designer: Michael Todd
 Company: Cornerstone Engineering & Surveying, Inc.
 Date: April 27, 2016
 Project: River Bend PUD, 501 West Main, Lyons, Colorado
 Location: Basin C

<p>1. Basin Storage Volume</p> <p>A) Effective Imperviousness of Tributary Area, I_e (100% if all paved and roofed areas upstream of sand filter)</p> <p>B) Tributary Area's Imperviousness Ratio ($i = I_e/100$)</p> <p>C) Water Quality Capture Volume (WQCV) Based on 12-hour Drain Time $WQCV = 0.9 * (0.91 * i^2 - 1.19 * i + 0.78 * i)$</p> <p>D) Contributing Watershed Area (including sand filter area)</p> <p>E) Water Quality Capture Volume (WQCV) Design Volume $V_{WQCV} = WQCV / 12 * Area$</p> <p>F) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm</p> <p>G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume</p> <p>H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired)</p>	<p>$I_e =$ <u>50.0</u> %</p> <p>$i =$ <u>0.500</u></p> <p>WQCV = <u>0.19</u> watershed inches</p> <p>Area = <u>17,240</u> sq ft</p> <p>$V_{WQCV} =$ <u>267</u> cu ft</p> <p>$d_s =$ <u>0.43</u> in</p> <p>$V_{WQCV\ OTHER} =$ <u>267</u> cu ft</p> <p>$V_{WQCV\ USER} =$ <u>400</u> cu ft</p>
<p>2. Basin Geometry</p> <p>A) WQCV Depth</p> <p>B) Sand Filter Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred). Use "0" if sand filter has vertical walls.</p> <p>C) Minimum Filter Area (Flat Surface Area)</p> <p>D) Actual Filter Area</p> <p>E) Volume Provided</p>	<p>$D_{WQCV} =$ <u>1.0</u> ft</p> <p>$Z =$ <u>5.00</u> ft / ft</p> <p>$A_{Min} =$ <u>108</u> sq ft</p> <p>$A_{Actual} =$ <u>260</u> sq ft</p> <p>$V_T =$ <u>400</u> cu ft</p>
<p>3. Filter Material</p>	<p>Choose One</p> <p><input checked="" type="radio"/> 18" CDOT Class B or C Filter Material</p> <p><input type="radio"/> Other (Explain):</p> <p>_____</p> <p>_____</p>
<p>4. Underdrain System</p> <p>A) Are underdrains provided?</p> <p>B) Underdrain system orifice diameter for 12 hour drain time</p> <p>i) Distance From Lowest Elevation of the Storage Volume to the Center of the Orifice</p> <p>ii) Volume to Drain in 12 Hours</p> <p>iii) Orifice Diameter, 3/8" Minimum</p>	<p>Choose One</p> <p><input checked="" type="radio"/> YES</p> <p><input type="radio"/> NO</p> <p>$y =$ <u>N/A</u> ft</p> <p>$V_{12} =$ <u>400</u> cu ft</p> <p>$D_o =$ _____ in</p>

Basin "C"

Design Procedure Form: Sand Filter (SF)

Sheet 2 of 2

Designer: Michael Todd
Company: Cornerstone Engineering & Sureying, Inc.
Date: April 27, 2016
Project: River Bend PUD, 501 West Main, Lyons, Colorado
Location: Basin C

5. Impermeable Geomembrane Liner and Geotextile Separator Fabric

A) Is an impermeable liner provided due to proximity of structures or groundwater contamination?

Choose One
 YES NO

6-7. Inlet / Outlet Works

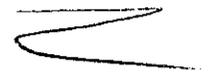
A) Describe the type of energy dissipation at inlet points and means of conveying flows in excess of the WQCV through the outlet

Flow into the sand filter will be over low sloping lawn area.

Notes:

Appendix C

Soils Information



Boulder County Area, Colorado

Nh—Niwot soils

Map Unit Setting

National map unit symbol: jps8
Elevation: 4,900 to 5,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Niwot and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niwot

Setting

Landform: Flood plains, terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy over sandy and gravelly alluvium

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 60 inches: gravelly sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat):
 Moderately high to high (0.60 to 6.00 in/hr) —
Depth to water table: About 18 to 36 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 5w ← B
Hydrologic Soil Group: B
Ecological site: Wet Meadow (R067XB038CO)

Minor Components

Loveland

Percent of map unit: 10 percent

Nunn

Percent of map unit: 4 percent

Aquolls

Percent of map unit: 1 percent

Landform: Flood plains

Data Source Information

Soil Survey Area: Boulder County Area, Colorado

Survey Area Data: Version 12, Sep 22, 2015

Search	
Area of Interest	<input type="button" value="Open All"/> <input type="button" value="Close All"/>
AOI Properties	
<input type="button" value="Clear AOI"/>	
AOI Information Name Map Unit Symbols <input checked="" type="radio"/> Use Soil Survey Area Map Unit Symbols <input type="radio"/> Use National Map Unit Symbols Area (acres) 6.34 Soil Data Available from Web Soil Survey Boulder County Area, Colorado (CO643) Data Availability Tabular and Spatial, complete Tabular Data Version 11, Sep 22, 2015 Spatial Data Version 2, Dec 30, 2013	
<input type="button" value="Clear AOI"/>	
Import AOI	
Export AOI	
Quick Navigation	
Address	<input type="button" value="View"/>
Address 501 west main street, Lyons colorado	
Show location marker <input checked="" type="checkbox"/>	
<input type="button" value="View"/>	
State and County	
Soil Survey Area	
Latitude and Longitude	
PLSS (Section, Township, Range)	
Bureau of Land Management	
Department of Defense	
Forest Service	
National Park Service	
Hydrologic Unit	

Area of Interest Interactive Map

Scale: 1:841 | View Extent: Contiguous U.S. | ±1%

Map navigation icons: Home, Previous, Next, Full Screen, Print, etc.

Appendix D
FIRM/FIS Information



MAP SCALE 1" = 500'



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0232J

FIRM FLOOD INSURANCE RATE MAP BOULDER COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 232 OF 615

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:		NUMBER	PANEL	SUFFIX
COMMUNITY	BOULDER COUNTY	080023	0232	J
LYONS, TOWN OF		080026	0232	J

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER
08013C0232J

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

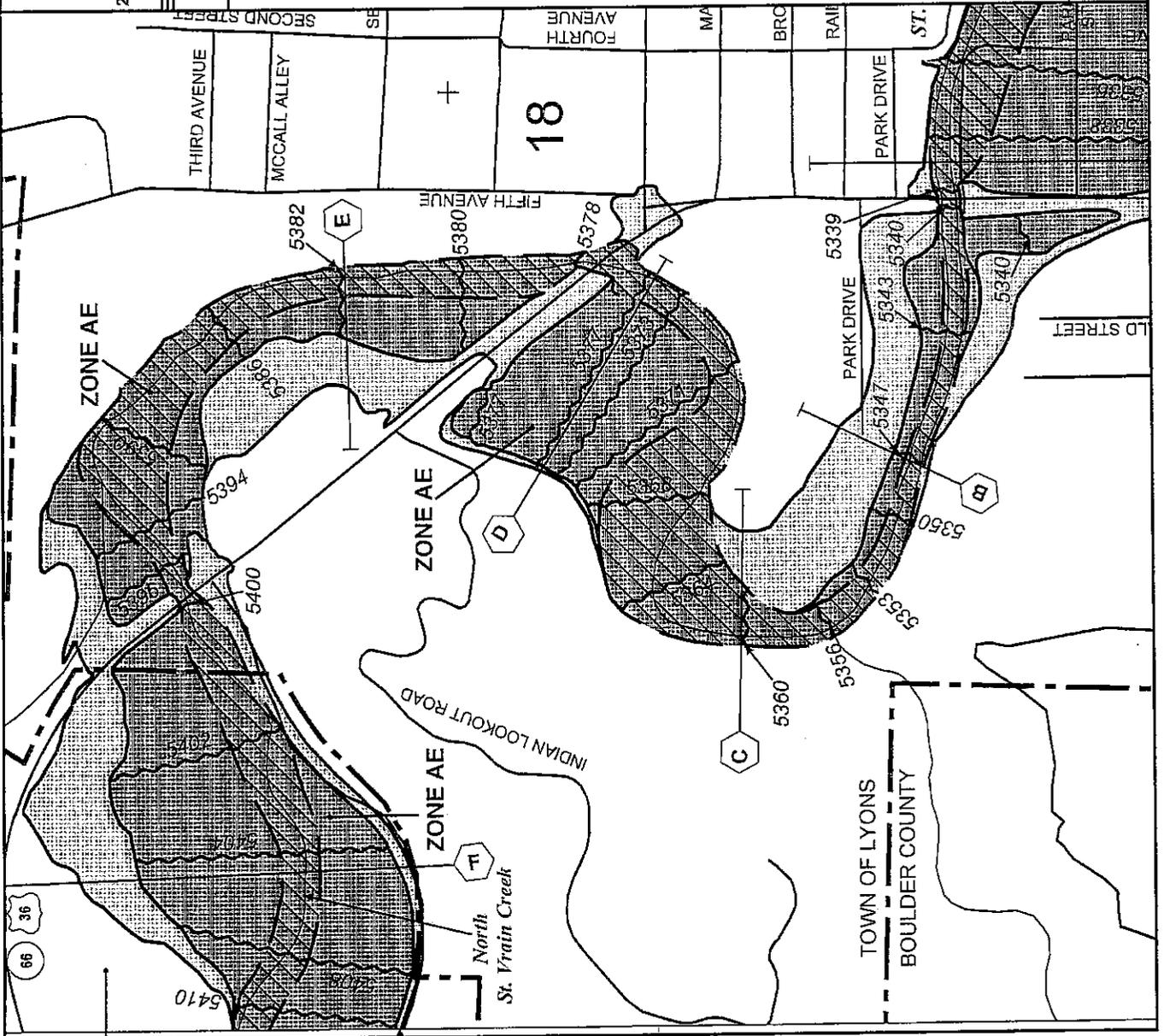


Table 4 -- Summary of Discharges (Continued)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharges (cfs)			0.2-Percent Annual Chance
		10-Percent Annual Chance	2-Percent Annual Chance	1-Percent Annual Chance	
Lefthand Creek (South Overflow Channel) At Divergence from Lefthand Creek At Confluence with Lefthand Creek (North Overflow Channel)	1.1 1.1	1 1	1 1	472 798	1 1
Little James Creek At Confluence with James Creek At Confluence of Balarat Creek	2.8 2.25	130 130	650 650	1,160 1,160	3,220 3,220
Little James Creek (continued) At Upstream Limit of Detailed Study	1.8	109	544	970	2,690
Little Thompson River At Larimer-Weld County Line	1.1	2,800	5,500	7,200	12,800
Middle Boulder Creek At Cross Section A At Cross Section G	36.3 29.9	693 596	884 760	960 825	1,130 971
Middle St. Vrain Creek At Confluence with South St. Vrain Creek	32.4	590	1,430	2,000	4,070
North Beaver Creek At Cross Section A At Cross Section T	5.3 5.0	74 70	117 112	135 129	185 178
North Goose Creek At Confluence with Goose Creek	1.1	3,865	3,865	3,865	6,075
North St. Vrain Creek At Confluence with St. Vrain Creek and South St. Vrain Creek	125.0	1,000	2,850	4,310	10,630

¹ Data Not Available

FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET NAVD)	WITHOUT FLOODWAY (FEET NAVD)	WITH FLOODWAY (FEET NAVD)	INCREASE (FEET)	
NORTH ST. VRAIN CREEK									
A	1,530	157	511	8.4	5,338.1	5,338.1	5,338.1	0.0	
B	2,550	60	331	13.0	5,347.0	5,347.0	5,347.0	0.0	
C	3,500	202	612	7.0	5,359.9	5,359.9	5,359.9	0.0	
D	5,090	98	361	12.0	5,373.6	5,373.6	5,373.6	0.0	
E	6,103	93	516	8.4	5,381.9	5,381.9	5,382.0	0.1	
F	8,721	115	436	9.9	5,404.3	5,404.3	5,404.6	0.3	
G	9,616	113	458	9.4	5,414.6	5,414.6	5,415.3	0.7	
H	10,346	53	327	13.2	5,423.1	5,423.1	5,423.1	0.0	

¹Feet above confluence with St. Vrain Creek and South St. Vrain Creek

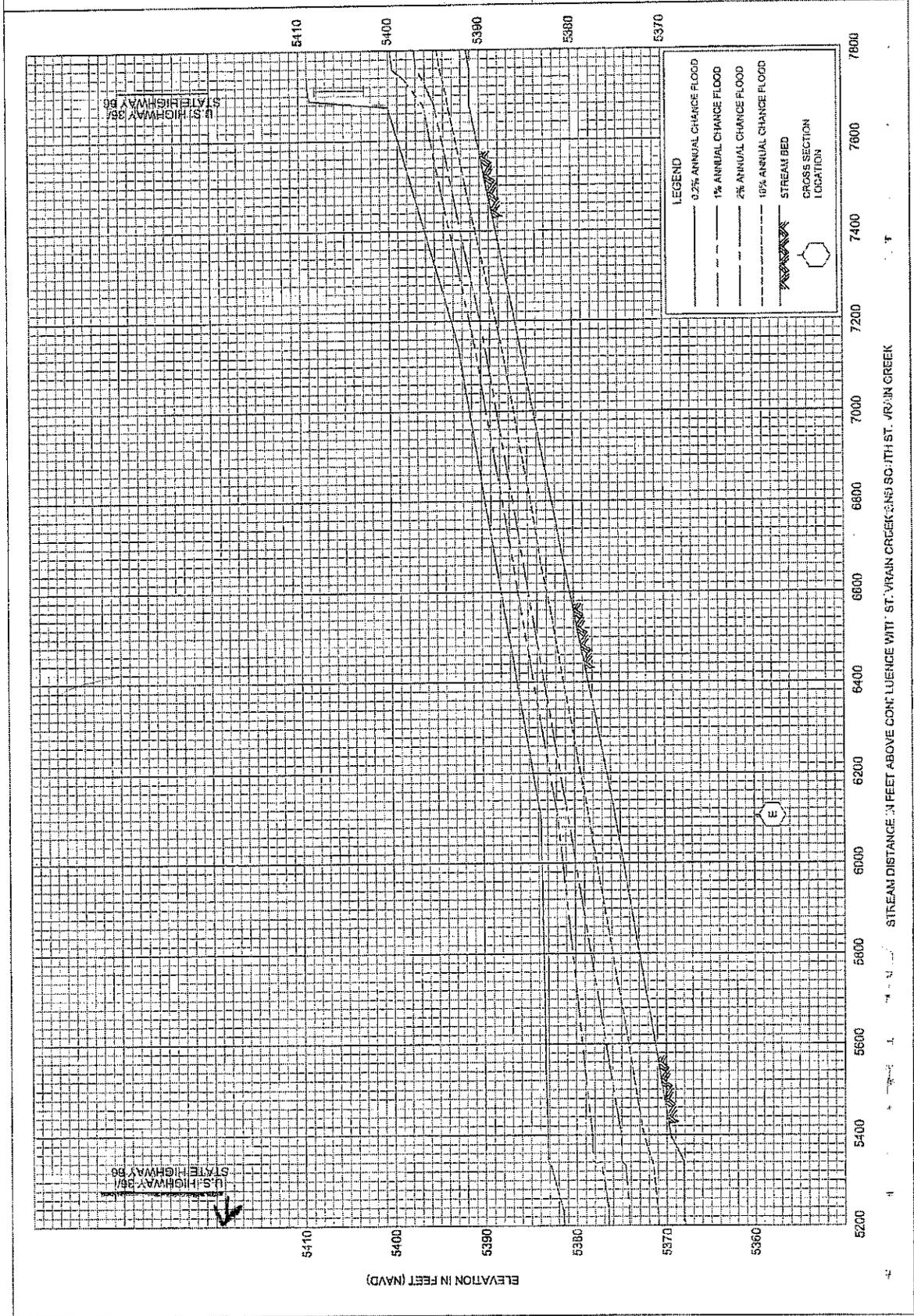
FEDERAL EMERGENCY MANAGEMENT AGENCY

**BOULDER COUNTY, CO
AND INCORPORATED AREAS**

FLOODWAY DATA

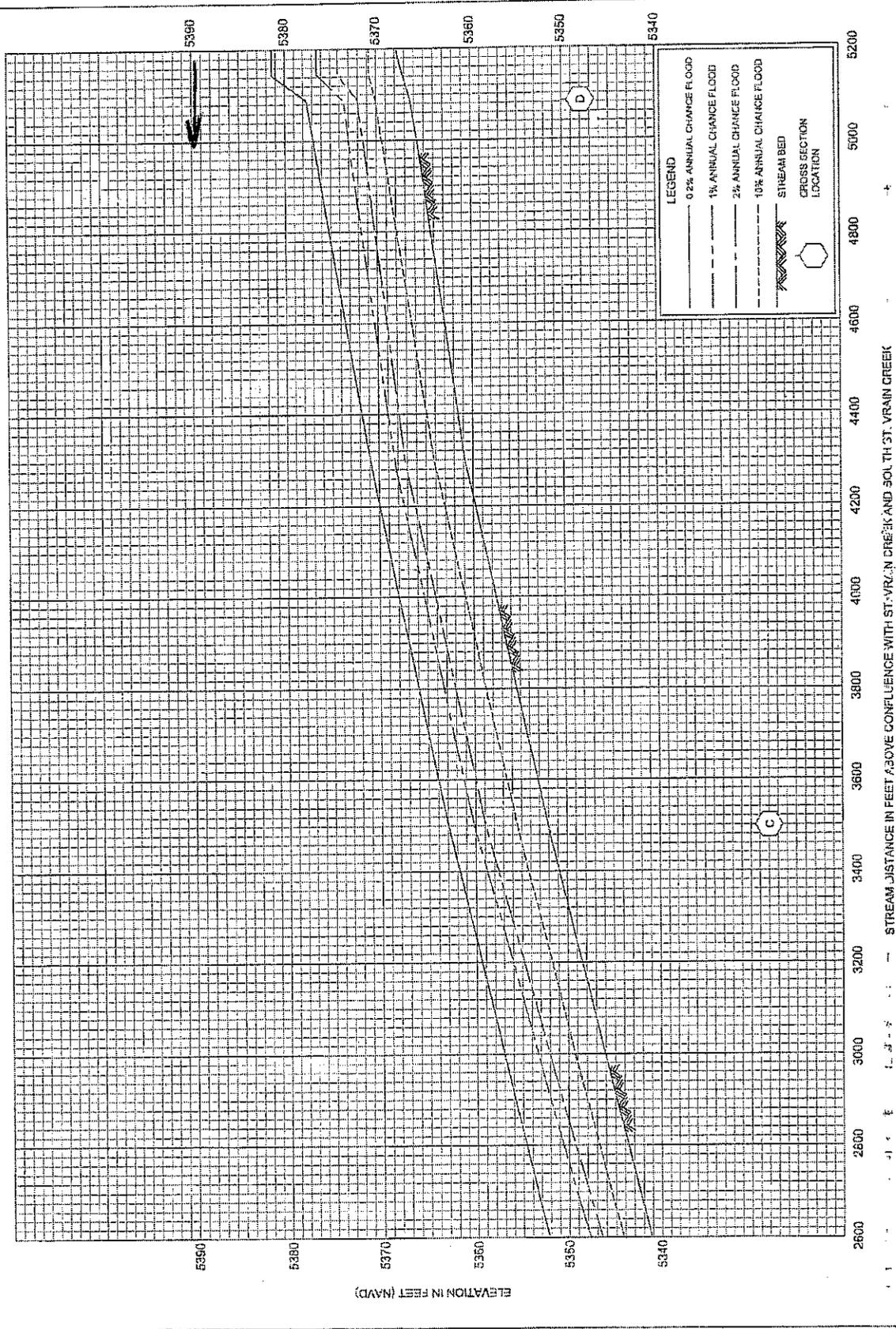
NORTH ST. VRAIN CREEK

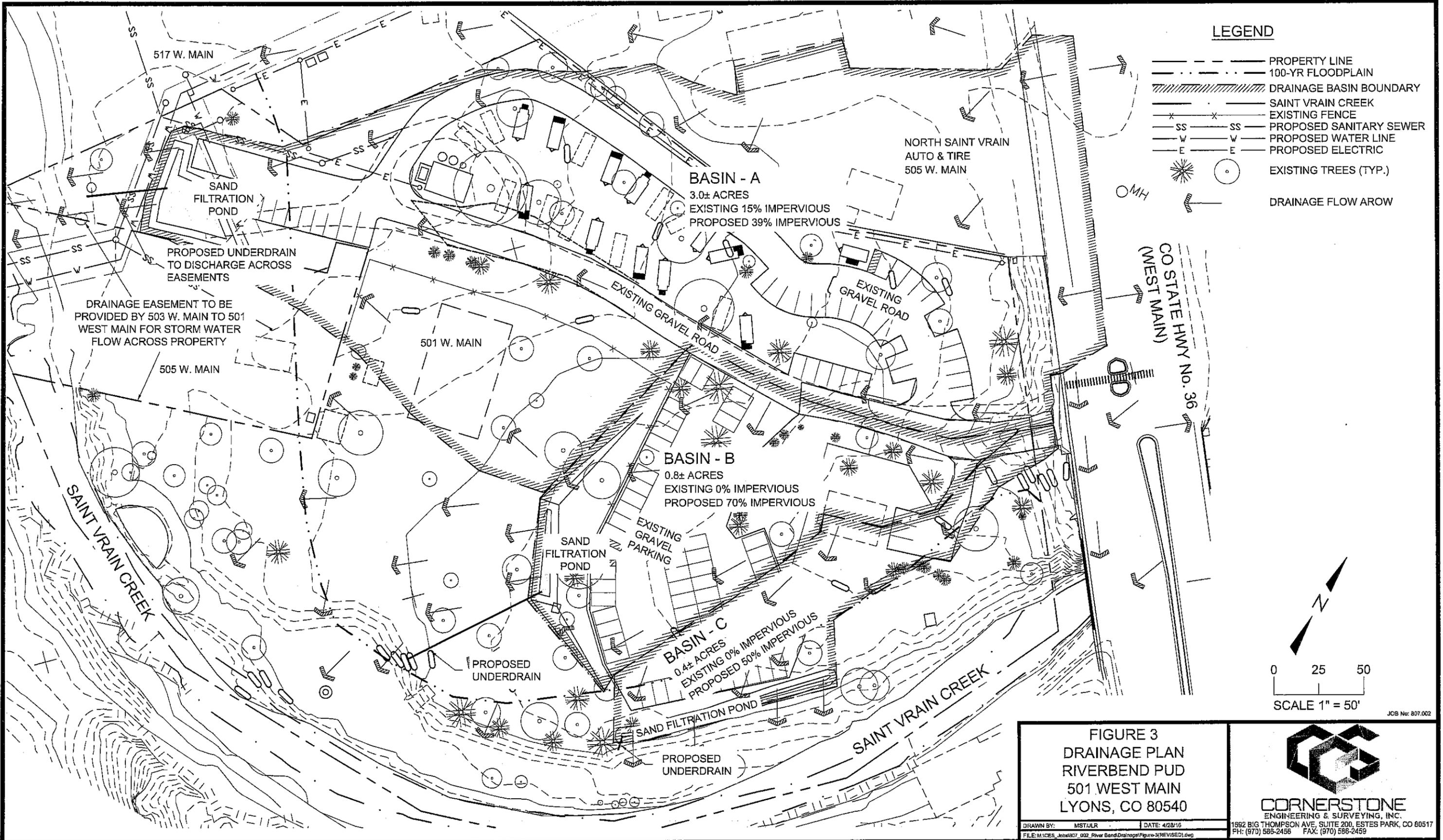
TABLE 6



STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH ST. VRAIN CREEK (245) SOUTH ST. VRAIN CREEK

ELEVATION IN FEET (NAVD)





LEGEND

- PROPERTY LINE
- - - 100-YR FLOODPLAIN
- ////// DRAINAGE BASIN BOUNDARY
- SAINT VRAIN CREEK
- x-x- EXISTING FENCE
- SS SS PROPOSED SANITARY SEWER
- W W PROPOSED WATER LINE
- E E PROPOSED ELECTRIC
- ⊙ ○ EXISTING TREES (TYP.)
- DRAINAGE FLOW AROW

BASIN - A
 3.0± ACRES
 EXISTING 15% IMPERVIOUS
 PROPOSED 39% IMPERVIOUS

BASIN - B
 0.8± ACRES
 EXISTING 0% IMPERVIOUS
 PROPOSED 70% IMPERVIOUS

BASIN - C
 0.4± ACRES
 EXISTING 0% IMPERVIOUS
 PROPOSED 50% IMPERVIOUS

FIGURE 3
DRAINAGE PLAN
RIVERBEND PUD
501 WEST MAIN
LYONS, CO 80540

CORNERSTONE
 ENGINEERING & SURVEYING, INC.
 1892 BIG THOMPSON AVE, SUITE 200, ESTES PARK, CO 80517
 PH: (970) 586-2456 FAX: (970) 586-2459

DRAWN BY: MST/HLR DATE: 4/28/16
 FILE: M:\ICES_local\807_002_River Bend\Drainage\Figure 3-REVISED1.dwg

JOB No: 807.002