Section 8. SUPPLEMENTARY MATERIALS FOR DRAINAGE SUBMITTALS

A. Drainage Submittal Format

1. *INTRODUCTION*

A Drainage Submittal is generally in the form of either a Conceptual Grading and Drainage Plan, Drainage Report or Grading and Drainage Plan. All drainage submittals shall include a cover letter explaining the purpose of the submittal and clearly identify the action being requested from SSCAFCA. Quite often, the terms are used interchangeably. The following are definitions of these three types of submittals:

2. *CONCEPTUAL GRADING AND DRAINAGE PLAN*

Conceptual Grading and Drainage Plans are a graphic representation of existing and proposed grading, drainage, flood control, erosion control and stormwater pollution prevention information. The information should be of sufficient detail to determine project feasibility. The purposes of this plan are to check the compatibility of the proposed development within grading, drainage, floodplain, erosion control and stormwater pollution prevention constraints as dictated by on-site physical features as well as adjacent properties, streets, alleys and channels. Modifications to the comprehensive plans and the development of area plans, sector plans, site development plans and landscaping plans on tracts of five (5) acres or more are appropriate applications of conceptual grading and drainage plans.

3. *DRAINAGE REPORT*

A Drainage Report is a comprehensive analysis of the drainage management, flood control, erosion control and stormwater pollution prevention constraints on and impacts resulting from the proposed platting, development or construction of a particular project. Drainage Reports are required for subdivisions containing more than 10 lots or comprising more than 5 acres, platting or construction proposed within a designated flood hazard area, and for platting or development proposed adjacent to a major arroyo.

4. *GRADING AND DRAINAGE PLAN*

A Drainage Plan is a comparatively short, yet comprehensive, presentation for small, non-complex development submittals. Drainage Plans are often combined with or accompany the detailed Grading Plan, and address both onsite and offsite drainage management, flood control, erosion control and stormwater pollution prevention. Drainage Plans are required for the approval of Building Permits, Site Development Plans, and Landscape Plans for the development of projects 5 acres or less in size.

The Format presented below provides for a logical and comprehensive treatment of the topics relevant to the review and analysis of a complete Drainage Submittal. The Format is presented in outline form for simplicity. In addition, each submittal shall include the following information:

1. Project Name
2. Name of Engineering Firm
3. Engineer's Seal (signed and dated)
4. Appropriate completed check list

NOTE: The following Outline is intended as a guide for the preparation of Drainage Submittals. Some items may not be applicable, while other items may require a more in-depth treatment or may have been overlooked in the preparation of the Outline.

A pre-design conference is required for projects where the scope may be difficult to define, the constraints and conditions somewhat unique, or the drainage solution non-traditional.

B. Drainage Report Outline

I. EXECUTIVE SUMMARY

A. Provide a brief yet comprehensive discussion of the following:

1. General project location

2. Development concept for the site

3. Drainage concept for the site (include relevant #'s as appropriate)

4. How offsite flows will be handled

5. How onsite flows will be handled and discharged

6. Downstream capacity and how determined

7. Impacts on or requirements of other jurisdictions

B. Identify all approvals being requested in conjunction with this submittal, such as:

1. Zone Change

2. Subdivision Plat

3. Site Plan for Subdivision

4. Site Development Plan for Building Permit

5. Building Permit

6. Sidewalk Culverts, Drain Line through Curb, Drain Line to Existing Storm Inlet

7. Grading Permit

8. Paving Permit

9. DPM Design Variance

10. CLOMR, LOMR or LOMA

11. USACE 404 Permit

II. INTRODUCTION

A. Narrative description of project scope

1. Provide more detail than presented in the Executive Summary (combine with Executive Summary for non-complex projects)

B. Project requirements

1. Discuss and reference required infrastructure and associated infrastructure list

2. Platting and/or easements

3. Approvals by and/or coordination with other Agencies and/or entities

C. Attachments (when applicable)

1. Infrastructure List (draft, preliminary, amended or approved)

2. Preliminary or Final Plat

3. Easement Documents

4. Drainage Covenants

5. Approval Letters

III. PROJECT DESCRIPTION

A. Location

1. Discuss relationship of the site to the following:

a. Well known landmarks

b. Municipal limits

c. City Zone Atlas page and reference

d. Other jurisdictional boundaries

e. Previously approved Drainage Management Plans, Drainage Reports, Plans or studies including watersheds, basins, drainage ways, etc. as defined therein

2. Provide copy of Zone Atlas page, or equivalent, with the site location superimposed

B. Legal Description

1. Identify the current legal description(s) of the land which comprises the site

2. Identify the proposed legal description(s), when applicable, of the land which comprises the site

3. Include a copy of existing and/or proposed platting as an attachment in cases where its inclusion will lend clarity or facilitate the review

C. Flood Hazard Zone

1. Identify proximity of site to a designated Flood Hazard Zone

2. Provide reference to the above referenced Flood Hazard Zone

3. Identify whether or not the site drains to, or has an adverse impact upon, a designated Flood Hazard Zone

4. Include a copy of the relevant FEMA Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map with the site clearly identified along with all affected Flood Zones

5. Identify portion of designated Flood Hazard Zone to be revised or amended when CLOMR, LOMR or LOMA approval requested

IV. BACKGROUND DOCUMENTS

A. Planning History

1. Reference and discuss relevant Planning and Zoning actions, plans or studies

2. Verify and/or demonstrate compatibility with the above actions, plans and studies

B. Drainage History and Related Documents

1. Reference and discuss relevant Drainage Management Plans, Drainage Plans, Reports and Studies

2. Reference applicable Hydrology Files.

3. Discuss status of above referenced Plans, Reports and Studies

4. Describe compatibility with or deviation from the above referenced Plans, Reports and Studies

5. Describe the location of site with respect to previously defined watersheds or drainage basins

6. Provide copies of pertinent data from above referenced Plans, Reports and/or Studies when applicable

V. EXISTING CONDITIONS

A. Site Investigation

1. Describe by text or clearly show graphically the following:

a. onsite drainage patterns

b. onsite drainage facilities

c. point(s) of discharge

d. drainage basin(s) boundaries

e. offsite drainage facilities

f. offsite drainage patterns including offsite flow conditions

g. condition and status of adjacent properties (e.g. developed, undeveloped, under construction, etc.)

h. condition and status of adjacent right-of-way (e.g. developed, undeveloped, under construction, etc.)

i. presence of any other relevant features

B. Site Evaluation

1. Discuss the significance and impacts of the following:

    a. onsite drainage facilities

    b. offsite drainage facilities

    c. point(s) of discharge

    d. drainage basin(s) boundaries

    e. offsite flow conditions

    f. proximity to designated flood hazard zone(s)

    g. presence of any other relevant features or conditions which may impact or be impacted by the development of the property or project

2. Form of Analysis

    a. Most situations - most submittals require both qualitative and quantitative analyses

    b. Unique situations - for some cases, such as infill sites, a qualitative analysis by itself may be appropriate. Examples of appropriate qualitative analysis criteria are:

        (1.) a comparison of the runoff generated by the proposed development to that generated by the overall drainage basin with respect to the impacts of the anticipated increase

        (2.) impacts on downstream flood plains

        (3.) potential offsite problems which may or may not be attributed to this development

        (4.) anticipated impact(s) and/or precedent to be set on the development of the remaining infill sites by following the same drainage concept

3. Downstream Capacity

    The evaluation of downstream capacity shall include, but not be limited to, the following:

    a. Assumptions

        (1.) fully developed watershed

        (2.) ability to accept and safely convey runoff generated from the 100-year design storm

b. Hydraulic capacity

(1.) channel

(2.) crossing structure

(3.) storm inlet and/or entrance conditions

(4.) storm drain

(5.) street and/or alley

c. Storage capacity

(1.) Detention pond/reservoir

(2.) Retention pond

(3.) Flood zone

d. Stability

(1.) Channel/arroyo

(2.) Natural slope

(3.) Cut/fill slope

e. Existing publicly owned ROW and Easements

VI. DEVELOPED CONDITIONS

A. Onsite

1. Discuss the following as applicable:

a. proposed development/construction

b. impacts on existing drainage patterns

c. impacts on existing drainage basins

d. impacts on existing onsite facilities

e. identification of offsite flow conditions

f. compatibility/compliance with previously approved and/or adopted Plans, Reports and Studies

g. sediment bulking and transport

h. aggradation and/or degradation potential

i. impacts on designated flood hazard zones

j. required private drainage improvements

k. required infrastructure

l. required easements

m. phasing and future improvements

n. ownership, operation and maintenance responsibilities

o. stormwater pollution potential during construction and post construction

2. Evaluate and/or quantify the following:

a. capacity and freeboard of existing onsite facilities

b. capacity and freeboard of proposed onsite facilities

c. impacts on designated flood hazard zones

d. impacts on existing drainage patterns and drainage basin boundaries

e. impact of offsite flows on the proposed development

f. erosion potential and erosion setback requirements

g. phased system capacities and ability to function as a standalone system

h. emergency overflow spillway conditions

B. Offsite

1. Discuss the following:

a. impacts on existing drainage basins and/or watersheds

b. impacts on existing offsite facilities and downstream capacity

c. compatibility/compliance with previously approved and/or adopted Plans, Reports and Studies

d. impacts on designated flood hazard zones

e. required improvements to insure runoff from development can be properly conveyed to a publicly owned arroyo or Storm Sewer System

f. required easements to insure runoff from development can be properly conveyed to a publicly owned arroyo or Storm Sewer System

g. right-of way dedications to insure runoff from development can be properly conveyed to a publicly owned arroyo or Storm Sewer System

h. phasing and future improvements

i. ownership, operation and maintenance responsibilities

j. concurrence and/or approval from affected property owners for offsite grading or construction activities

2. Evaluate and/or quantify the following:

a. capacity of existing offsite facilities

b. capacity of proposed offsite facilities

c. impacts on downstream designated flood hazard zones

d. impacts on downstream drainage basins and/or watersheds

e. downstream capacity

NOTE: Any excess downstream capacity, based on a fully developed watershed, will be allocated by SSCAFCA

VII. GRADING PLAN

A. Description

1. Reference the Grading Plan when included as an attachment to the Drainage Submittal

2. Describe elements of the Plan and how those elements relate to the Existing and Developed Conditions sections of the submittal discussed above

3. Discuss and reference all other supporting drawings provided in support of the Drainage Submittal

B. Content

1. Refer to Grading Plan Checklist that follows

VIII. CALCULATIONS

A. Description

1. Provide narrative description of the calculations performed to support the analyses and evaluations discussed above

2. Discuss and reference calculations for Existing, Developed and Future hydrology

3. Discuss and reference hydraulic calculations demonstrating capacity and/or adequacy of existing and proposed facilities

4. Provide sample calculations, tables, charts, etc. as necessary to support the calculations and results discussed above

5. Reference computer software, documents, circulars, manuals, etc. used to produce the calculations and results discussed above

IX. CONCLUSION

A. Summary of proposed drainage management strategy

B. Justification of rationale for discharge of developed runoff from site

C. Summary of proposed drainage improvements

D. Identification of DPM design variances being requested

E. Identification of required Drainage Covenants

F. Identification of ownership, operation and maintenance responsibilities

The following check list must be completed and submitted

with the drainage report.

EXHIBIT 8-1

DRAINAGE REPORT CHECKLIST

NOTE: This document is intended as an aid in preparing Drainage Reports located in southern Sandoval County. This checklist was developed by the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA). This document is not intended to be all inclusive, and does not limit the extent of the information, calculations, and exhibits that may be necessary to properly evaluate the intended land use. **This checklist must be included with all drainage report submittals.**

General Information:

Date: _____File Name or No. _____
Project Name: _____
Proposed Land Use:_____Zoned:_____
Location:_____Acreage:_____ No. of Lots:_____
Legal Description:_____
FIRM Community Panel No: _____ SFHA: ○ Yes ○ No
Engineering Firm:_____
Project Manager:_____
Telephone No: _____ Fax No: _____
Address: _____
Email: _____

Drainage Report Contents General Format

The following items must be included in order to initiate review:

1. Project Name and Legal Description
2. Engineer's Seal, Signature and Date
3. Typed, Bound, Legible Report
4. Pertinent portions of all referenced information/reports
5. Drainage Report Checklist

Engineer's Signature:_____Date:_____

(seal)

Introduction

Description	Yes (included)	Not Applicable	Reviewer's Notes
Type of approval sought (i.e. zone change, subdivision plat, vacation, site plan, paving or grading permit, variance)			
Complete summary of study intent, resultant Drainage Management Plan for the site**.** Describe how all off- and on-site flows are dealt with and how they leave the site, with respect to downstream capacity, historic and/or existing and full development condition flows.			
Location and Project Description			
Vicinity Map			
Copy of Preliminary or Final Plat			
Phasing Description			
Discussion of jurisdictions affected			
Watershed Name			
Site investigation Summary (describe if any grading has occurred since topography shown on plan, existing off- and on-site drainage facilities, etc.)			

References and Drainage / Planning History

Description	Yes (included)	Not Applicable	Reviewer's Notes
Floodplain Information & Map (show property location on copy of effective FEMA Flood Insurance Rate Map (FIRM)			
References - Planning History, Zoning			
SSCAFCA/Master Planning Info. (facility design over 500 cfs or adjacent to SSCAFCA facility will require SSCAFCA approval)			

Drainage Basin Description

Description	Yes (included)	Not Applicable	Reviewer's Notes
Off-site Flow Description & Map (with topo, flow patterns, and Q100)			
Existing Site Condition and Drainage Facilities Description			
Soils, Geology, Land Treatments			
Existing and proposed zoning and land use			
On-site Flow Description & Map (with topo, flow patterns, Q100 pre and post development, V100 pre and post development at analysis points)			

Hydrology

Description	Yes (included)	Not Applicable	Reviewer's Notes
Discussion of Hydrologic Model / Methodology (must use current version of AHYMO or equivalent hydrologic modeling program i.e. HEC-HMS)			
Modeling Schematic			
Rainfall Distribution 2-yr. / ___hr. or ____day 10-yr. / ___hr. or ____day (req'd for street design) 100-yr. /___hr. or ____day			
Land Treatment allocations (%) Pre-development / post-development			
Time to Peak Calculations			
Emergency Spillway Design			
Spillway Flood Return Period ___-yr./___hr. or ____day			

Channel Routing (must use Muskingum-Cunge procedure)			
Reservoir Routing			

Hydrology Cont.

Description	Yes (included)	Not Applicable	Reviewer's Notes
Elevation-Area-Volume-Discharge data and calculations			
Detention Pond Flood Routing Summary Table A*			
Hydrologic Summary Table B (main analysis points)*			
Sediment Yield/Sediment Transport (aggradation/degradation analysis)			
Input File (paper & digital)			
Output File (paper & digital)			
Existing and Proposed Development Site Plan			
State Engineer's Office Approval (dams in excess of 50 acre feet of storage or 25' of embankment height)			
**Blank Summary Tables are attached to this checklist for inclusion in the consultant's report*			

Hydraulics

Description	Yes (included)	Not Applicable	Reviewer's Notes
Discussion of Hydraulic Model(s) and Methodology			
Parameters for Model(s) / Methodology			
Storm Sewer Hydraulics and Storm Inlet Capacity Calculations (must be submitted)			
Street Capacity Calculations (10-year and 100-year)			
Arroyo, Channel, Culvert, Bridge Capacity Calculations			
Arroyo / Channel stability addressed			
Scour Calculations			
Superelevation Calculations			
Floodplain/Floodway Discussion & Calculations			
Freeboard and levee criteria addressed			
Comparison of historic/existing/fully developed condition peak discharge rates and runoff volumes with respect to existing and proposed drainage infrastructure capacities.			
Verification and discussion of downstream capacity			

Miscellaneous

Description	Yes (included)	Not Applicable	Reviewer's Notes
Pertinent portions of all referenced information			
Soils investigation			
Structural calculations for retaining walls in excess of 3' in height, sealed by Structural Engineer			
Letter for permission to grade on adjacent parcels from parcel's owner			
Operations / Maintenance requirements ownership/easements and ROW			
All weather access addressed			

Conclusions

Compliance with local criteria			
Compliance with SSCAFCA criteria			
Compliance with City of Rio Rancho DPM (Sections 22.2 through 22.8) and SSCAFCA criteria			

C. Grading and Drainage Plan Checklist

The following checklist is intended as a guide for preparing a Grading and Drainage Plan to accompany a drainage report or plan. Some items may not be applicable to your particular project; some items may require more detail. A Pre-design Conference is recommended to define scope and project specific requirements.

GENERAL INFORMATION:

1. Professional Engineer's stamp with signature and date.

2. Drafting Standards: (Reference City of Rio Rancho Standards)

   A. North Arrow

   B. Scales - recommended engineer scales:

      (1) 1" = 20' for sites less than 5 acres

      (2) 1" = 50' for sites 5 acres or more

   C. Legend - see City of Rio Rancho D.P.M. Manual, Volume 2, for recommended standard symbols

   D. Plan drawings size: 24" x 36"

   E. Notes defining property line, asphalt paving, sidewalks, planting areas, ponding areas, project limits, and all other areas whose definition would increase clarity

3. Vicinity Map

4. Benchmark - location, description and elevation

   A. Control survey vertical datum

   B. Permanently marked temporary benchmark located on or very near site

5. Flood Insurance Rate Map (FIRM)

6. Legal Description

EXISTING CONDITIONS

1. On-site:

   A. Existing Contours - vertical intervals for contour maps shall not exceed the following:

      (a) One foot intervals for slopes under 1% with sufficient spot elevations at key points to adequately show the site's topography

      (b) Two feet for slopes between 1% and 5%

      (c) Five feet for slopes in excess of 5%

   B. Spot elevations adequately showing conditions on-site.

   C. Contours and spot elevations extending a minimum of 25' beyond property line.

   D. Identification of all existing structures located on-site or on adjacent property extending a minimum of 25' beyond property line with particular attention to retaining and garden walls.

   E. Identification of all existing drainage facilities located on-site or on adjacent property.

   F. Pertinent elevation(s) of structures and facilities defined in A, B and C should be based on the NAVD 88.

   G. Indication of all existing easements and rights-of-way on or adjacent to the site with dimensions and purpose shown.

   H. Existing top of curb and flow line elevations with NAVD 88 designation.

   I. The location of Special Flood Hazard Area Boundaries from the latest FEMA maps must be overlaid on the existing site map (enlarged to site plan scale), when applicable.

2. Off-site:

   A. Contributing Area - delineation of off-site contributing watersheds and/or drainage basins on ortho-topo area maps or equivalent mapping at a preferable scale of 1" =200' or 1" = 500'. Watershed and Basin designations shall match those used in the hydrology calculations.

   B. Existing easements and rights-of-way including ownership and purpose.

PROPOSED CONDITIONS

1. On-site:

   A. Proposed improvements superimposed onto the existing conditions,

B. Proposed Grades

Proposed grades shall be adequately depicted by contours and/or spot elevations conforming with the following minimum criteria:

(1) Contours - vertical intervals for contour maps shall not exceed the following:

(a) One foot intervals for slopes under 1% (with supplemental spot elevations as appropriate to adequately illustrate the proposed grading of the site).

(b) Two feet for slopes between 1% and 5%.

(c) Five feet for slopes in excess of 5%.

(2) Spot Elevations - supply spot elevations at the following:

(a) Key points and grade breaks

(b) Critical locations

(c) Pad elevations

C. Indication of all proposed easements and rights-of-way on or adjacent to the site with dimensions and purpose identified.

D. City Engineer approved street and/or alley grades when site abuts a dedicated unpaved street or alley. In the event that approved grades are not available, provide preliminary street and/or alley grades.

E. Internal contributory drainage areas, including roof areas, outlined on plan.

F. Flow lines defined by arrows and spot elevations with NAVD 88 designation, as appropriate for clarity.

G. Pond(s) 100 year water surface elevation outlined and indicated on plan.

H. Finish building floor elevation(s) or pad elevation(s) with complete NAVD 88 designation, when applicable.

I. Elevations along property lines including relationship to adjacent top of curb.

J. Details of ponds, inverts, rundowns, curb cuts, water blocks, emergency spillways, retaining walls, pond outlets, safety fences, slopes, and all other significant drainage structures with contours, cross-sections and spot elevations. All cross-sections must be drawn to a standard engineering scale and adequately dimensioned.

K. Phasing,

L. Proposed construction of private storm drain improvements within public right-of-way and/or easement including identification of the public entity having ownership.

M. Proposed contours superimposed over existing contours adequately demonstrating changes in grade especially at the property line.

N. Identification of any required offsite grading.

O. Specifications for the proposed grading and/or soil compaction.

P. Erosion Control and Stormwater Pollution Prevention Plans. See Erosion Control and Stormwater Pollution Prevention Plans Checklist.

2. Off-site:

A. Definition, location, and configuration of required drainage facilities.

B. Rights-of-way and easements needed to accommodate (A) above.

GRADING AND DRAINAGE PLAN NOTE REGARDING BOUNDARY SURVEYS:

This is not a boundary survey; data is shown for orientation only. The boundary information depicted by this plan is based upon the (boundary survey, plat, etc.) prepared by _____, NMPS no. _____, dated ___/___/_____. Topographic survey information is based upon a topographic survey prepared by _____ on ___/___/_____, NMPS no. _____.

The following check list must be completed and submitted

with the Grading & Drainage Plan.

EXHIBIT 8-2
GRADING AND DRAINAGE PLAN CHECKLIST

A grading and drainage plan is required for Building Permits, Site Development Plans, Landscaping Plans and for developments involving less than 5 acres

Note: This document is intended as an aid in preparing Grading and Drainage Plans for projects located in Southern Sandoval County. This checklist was developed by the Southern Sandoval County Arroyo Flood Control Authority (SSCAFCA). This document is not intended to be all inclusive, and does not limit the extent of the information, calculations, and exhibits that may be necessary to properly evaluate the intended land use. **This checklist must be included with all grading and drainage plan submittals.**

General Information:

Date: _____File Name or No. _____
Project Name: _____
Proposed Land Use:_____Zoned:_____
Location:_____Acreage:_____ No. of Lots:_____
Legal Description:_____
FIRM Community Panel No: _____SFHA: Yes No
Engineering Firm:_____
Project Manager:_____
Telephone No: _____ Fax No: _____
Address: _____
Email: _____

Engineer's Signature:_____Date:_____

(seal)

Grading and Drainage Plan Checklist

Description	Yes (Included)	Not Applicable	Reviewer's Notes
Signature Block for Approvals			
Sheet Size: 24" x 36"			
Scale: 1" = 20' for sites less than 5 acres 1" = 50' for site greater than 5 acres			
Bar Scale			
North Arrow			
Vicinity Map			
Legend (reference DPM Tables 27.3a – 27.3d for recommended standard symbols)			
Local Drafting Standards (reference DPM, Chapter 27)			
Project Name			
Professional Engineer's Seal, signature, and date			
Legal Description			
Site Address			
Basis of Bearings			
Benchmark and Datum (above mean sea level)			
Site Benchmark			
Right-of-way lines and dimensions Existing and Proposed			
Easement lines and dimensions Existing and Proposed			
Property Line location, bearings and dimensions existing and proposed			
Limits of existing floodplain based on effective Flood Insurance Rate Map: include a copy of the FIRM and provide reference to Panel number			
Phase lines			
Street Names			
Street dimensions			
Utility Locations Existing and Proposed			
Septic Tank and Leach Field locations			
Retaining and garden wall locations for all walls within 25' of the subject property			
Proposed wall locations and details			
Existing contours encompassing the subject property and 25' beyond boundaries at the following intervals: 1' for slopes less than 1% 2' for slopes between 1% and 5% 5' for slopes greater than 5%			
Existing and proposed spot elevations at critical locations, including: Top of curbs at returns, flow lines, street crowns, lot lines, and all grade breaks. Spot elevations must be provided in sufficient intervals to detail existing and proposed drainage patterns, slopes and transitions			
Daylight proposed contours to existing			
Verify no cross-lot drainage			
Minimum finished floor elevations			
Flow Arrows			

D. Erosion Control and Stormwater Pollution Prevention Plans Checklist

Use this checklist to prepare a plan for the mitigation of damages due to stormwater pollution, soil erosion and deposition. All grading of 1.0 acre or more or 500 cubic yards and any grading within or adjacent to a watercourse defined as a major facility during the months of June, July, August, or September shall provide for erosion control and the safe passage of the 100-year design storm runoff during the construction phase. A Stormwater Pollution Prevention Plan shall be provided for all grading of 1.0 acre or more.

NOTE: *The following checklist is intended to be used as a guide for preparing the plan to meet any or all drainage requirements. Some items may not be applicable to your particular project; some items may require more detail. A Pre-design Conference is required to define the scope and specific requirements.*

1. Provide the corresponding information for the following phases of development:

   A. Rough grading

      1. Grading plan with limits of soil disturbance outlined.

      2. Erosion protection and stormwater pollution prevention practices indicated.

      3. Supporting data, calculations, references and details drawn to scale or adequately dimensioned.

      4. Erosion control and stormwater pollution prevention notes:

         a. The contractor is to ensure that no soil erodes from the site onto adjacent property or public right-of-way. This should be achieved by implementing Best Management Practices (BMPs) to protect the soil from wind, and water erosion.

         b. During the months of June, July, August or September, any grading within or adjacent to a watercourse defined as a major facility shall provide for erosion control and safe passage of the 100-year design storm runoff during the construction phase.

         c. Contractor shall conform to all City, County, State and Federal dust control and stormwater pollution prevention requirements and is responsible for preparing and obtaining all necessary applications, permits and approvals.

         d. All graded areas which do not receive a final surface treatment will be revegetated in accordance with New Mexico APWA Standard Specification 1012 and the Landscape Specifications.

e. Contractor shall obtain and abide by a Grading Permit from the City of Rio Rancho. The cost for required construction dust and erosion control measures shall be incidental to the project cost.

B. Phased development

1. Grading plan with limits of soil disturbance outlined for each phase of development and numbered in sequential order of events.

2. Erosion protection and stormwater pollution prevention procedures indicated for each phase.

3. Supporting data, calculations, references and details drawn to scale or adequately dimensioned.

C. Construction and permanent phase

1. Grading plan with limits of soil disturbance outlined.

2. Erosion protection and stormwater pollution prevention practices indicated.

   a. Project owner and the owner's contractor shall complete federal EPA Notice of Intent (NOI) prior to commencement of any construction project disturbing 1.0 or more acres of land area.

   b. Stormwater Pollution Prevention Plans and accompanying federal EPA administrative procedures shall meet the guidelines and procedures outlined in the current edition of the New Mexico Department of Transportation Stormwater Management Guidelines for Construction and Industrial Activities Manual.

3. Supporting data, calculations, references and details drawn to scale or adequately dimensioned.

The following check list must be completed and submitted

with the Erosion Control & Storm Water Pollution Prevention Plan.

EXHIBIT 8-3

EROSION CONTROL & STORMWATER POLLUTION PREVENTION PLAN CHECK LIST

An erosion control plan is required for all grading of 1 acre or more or 500 cubic yards or more and any grading within or adjacent to a watercourse defined as a major facility during the months of June, July, August or September. The plan shall provide for erosion control and safe passage of the 100-year 6-hour design storm runoff during the construction phase.

Instructions - Fill out <u>all that is applicable</u> and relevant, submit this checklist with the Erosion Control Plan and or the Grading and Drainage Plan

Date: _____
Erosion Control Plan Name:_____
_____
Consultant / Designers Name:_____
Consultant / Designers Telephone Number:_____

<u>Erosion Control Plan General Format / Checklist:</u>

Item and Description	**Consultant (put "Y" yes or "NA" not applicable**	**Reviewer (put "Y" yes adequate or comment or reference a "footnote" for review letter**
GENERAL		
1. Title Block with Project Title 2. Designers Signature and Date	_____	_____
ROUGH GRADING		
1. Grading Plan with limits of soil disturbance outlined	_____	_____
2. Erosion Protection Indicated	_____	_____
3. Supporting data, calculations, references and details drawn to scale or adequately dimensioned	_____	_____
4. Erosion control notes:	_____	_____
a. The contractor is to ensure that no soil erodes		

from the site onto adjacent property or public right-of-way. This should be achieved by wetting the soil to protect it from wind erosion and by installation of berms per detail this sheet. _____ _____

b. At all time, but especially during the months of June, July, August or September, any grading within or adjacent to a watercourse defined as a major facility shall provide for erosion control and safe passage of the 100-yr. 6-hour design storm runoff during the construction phase. _____ _____

c. Contractor shall conform to all City, County, State and Federal dust control requirements and is responsible for preparing and obtaining all necessary applications and approvals. _____ _____

d. All graded areas which do not receive a final surface treatment will be revegetated in accordance with New Mexico APWA Standard Specification 1012 and the Landscape Specifications _____ _____

e. Contractor shall obtain and abide by a Topsoil Disturbance Permit from the local jurisdiction. The cost for required construction dust and erosion control measures are incidental to construction. _____ _____

PHASED DEVELOPMENT

1. Grading Plan with limits of soil disturbance outlined for each phase of development and numbered in sequential order of events. _____ _____

2. Erosion protection indicated for each phase. _____ _____

3. Supporting data, calculation, references and detail drain to scale or adequately dimensioned. _____ _____

CONSTRUCTION AND PERMANENT PHASE

1. Grading Plan with limit of soil disturbance outlined. _____ _____

2. Erosion protection indicated. _____ _____

3. Supporting data, calculations, references and detail drawn to scale or adequately dimensioned. _____ _____

E. Engineer's Certification Checklist for Non-Subdivision Development

Use this checklist when certifying compliance with an approved drainage report or drainage plan for public, commercial and multi-residential buildings requiring a Certificate of Occupancy building permit or grading and paving projects. Engineer must revise the original drawing as approved with the following information which shall serve as minimum criteria for evaluation. This is merely a guide. The level of detail necessary for presentation and verification is a function of the specific plan being evaluated. The engineer's certification must be approved prior to the release of the issuance of a Certificate of Occupancy, or acceptance (by the City) of the completed work.

1. Completed Information Sheet - see Information Sheet.

2. Provide as-built finished floor and/or pad

3. Provide as-built spot elevations on the property line and/or limits of phase development (points of significant grade changes) to demonstrate compliance with the approved drainage report or drainage plan.

4. Provide copies of construction approval from the appropriate government agencies for construction within their right-of-ways and/or easements.

5. Outline the as-built drainage basin(s) (including roof areas) supported with sufficient spot elevations and roof drain locations.

6. Provide as-built elevations and dimensions for the following structures:

   A. Pond(s) (include as-built volume calculations)

   B. Pipe inlet(s) and outlet(s) (include as-built capacity calculations)

   C. Rundown(s) (including the required inlet dimensions)

   D. Spillway(s) (including the required outlet dimensions)

   E. Channel(s)

   F. Flowlines

   G. Erosion control and stormwater pollution prevention structure(s)

   H. Temporary drainage, erosion control and stormwater pollution prevention facilities required for phased development

   I. Retaining and/or garden wall(s)

J. Other features critical to the drainage scheme.

7. Professional Certification

   A. Engineer's stamp dated and signed accompanied with a statement indicating substantial compliance with the approved drainage report and/or deficiencies with recommended corrections.

   B. The surveying associated with the certification must be performed by a professional engineer and/or surveyor in accordance with the "New Mexico Engineering and Surveying Practice Act" as amended and any standards adopted by the State Board of Registration.

ENGINEER'S CERTIFICATION CHECKLIST FOR SUBDIVISIONS

Use this checklist when certifying compliance with an approved drainage report or grading and drainage plan for subdivisions when required for the release of financial guarantees associated with an executed Subdivision Improvement Agreement (SIA). Engineer must revise the approved drawing with the following information, which shall serve as minimum criteria for evaluation. This is merely a guide. The level of detail necessary for presentation and verification is a function of the specific plan being evaluated. The engineer's certification must be approved prior to the release of the SIA and/or financial guarantees.

1. Completed Information Sheet - see Information Sheet.

2. As-Built Information:

   A. Pad elevations

   B. Top of Curb Elevations at critical locations

   C. Property corner elevations at each lot

   D. Horizontal and vertical data for storm drains (public and private)

   E. Horizontal and vertical data for retaining walls

3. As-Built Analysis

   A. Statement and verification that all grades inside the subdivision do not deviate by more than 18" of the approved grades within 50 feet of the subdivision's perimeter.

   B. Statement and verification of street, storm drain and channel hydraulic capacities.

   C. Statement and verification of pond capacities.

   D. Statement of as-built elevation tolerances with respect to the feature being analyzed.

4. Other Approvals

   A. When necessary or appropriate, provide documentation of acceptance or construction approval from other affected governmental agencies or property owners.

5. Clearly State the origin and Date(s) of As-Built Data

6. Supplemental Information

   A. Provide details as necessary to illustrate as-built conditions for instances in which the as-constructed work materially deviates from the as approved design.

   B. Provide calculations to demonstrate and/or verify that all deviations satisfy the intent of the approved design.

7. Professional Certification

   A. Engineer's stamp dated and signed accompanied with a statement indicating substantial compliance with the approved drainage report and/or deficiencies with recommended corrections.

   B. The surveying associated with the certification must be performed by a professional engineer and/or surveyor in accordance with the "New Mexico Engineering and Surveying Practice Act" as amended and any standards adopted by the State Board of Registration.

DRAINAGE CERTIFICATION WITH SURVEY WORK BY PROFESSIONAL SURVEYOR

DRAINAGE CERTIFICATION

I, _____, NMPE ___, OF THE FIRM _____, HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND WILL DRAIN IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED _____. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY _____, NMPS ___, OF THE FIRM _____. I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON _____ AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR _____.

(DESCRIBE ANY EXCEPTIONS AND/OR QUALIFICATIONS HERE IN A SEPARATE PARAGRAPH)

(DESCRIBE ANY DEFICIENCIES AND/OR CORRECTIONS REQUIRED HERE IN A SEPARATE PARAGRAPH)

THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE GRADING AND DRAINAGE ASPECTS OF THIS PROJECT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

_____

XXXXXXXXXXXXXXX, NMPE XXXX

(SEAL)

_____

DATE

DRAINAGE CERTIFICATION WITH VERIFICATION BY ENGINEER OF RECORD

DRAINAGE CERTIFICATION

I, _____, NMPE ___, OF THE FIRM _____, HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND WILL DRAIN IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED _____. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY ME OR UNDER MY DIRECT SUPERVISION AS SUPPLEMENTAL DATA TO THE ORIGINAL TOPOGRAPHIC SURVEY PREPARED BY _____, NMPS _____, OF THE FIRM _____, AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR _____.

(DESCRIBE ANY EXCEPTIONS AND/OR QUALIFICATIONS HERE IN A SEPARATE PARAGRAPH)

(DESCRIBE ANY DEFICIENCIES AND/OR CORRECTIONS REQUIRED HERE IN A SEPARATE PARAGRAPH)

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_____

XXXXXXXXXXXXXXX, NMPE XXXX

(SEAL)

_____

DATE

F. Procedures for Development Review and Approval

This procedure is for development, design, and approval of infrastructure improvement plans. This process is for Private Development projects.

PROCEDURE: INFRASTRUCTURE DESIGN DEVELOPMENT

Pre-Design Phase

For complex projects, this phase shall begin with a pre-design meeting with City/SSCAFCA staff.

Step 1: Application for Pre-Design Conference

Submit a letter to City/SSCAFCA requesting a pre-design meeting.

Application Materials:

- Two (2) copies of Sketch Plat/Plan (if available, a Preliminary Plat and Findings may be substituted).
- A copy of the Conceptual Drainage and Grading Plan.
- The cost of the land being dedicated or the cost of the easement being granted.

Note: If a developer or designer does not have all required submittals available, the developer may still apply for a Pre-Design Conference with SSCAFCA. However, the outcome of the conference will be a limited instruction, pending receipt of the remaining required submittals. A second Pre-Design Conference may be conducted, if requested by the applicant or required by SSCAFCA due to project scope.

Outcome:

- Reviews application material for completeness. If insufficient, developer is notified of additional requirements.
- Schedules the Pre-Design Conference with City/SSCAFCA.
- Assigns the project number, unless previously assigned.
- Starts project file.

Step 2: Pre-Design Conference

The Pre-Design Conference allows the developer, consulting engineer, and other City/SSCAFCA staff to discuss detailed design requirements, the consulting engineer's approach to implementing

drainage infrastructure requirements, construction phasing for partial acceptance, and the subsequent design and review procedures.

Partial Acceptance: When application for design and construction of public infrastructure improvements is made, the developer indicates on the application if partial acceptance of the proposed construction will be requested. Partial acceptance will be a topic for discussion at the Pre-Design Conference. Each subdivision for which partial acceptance of improvements is requested will be examined at the Pre-Design Conference to determine what parts, if any, can function adequately without the remaining parts. These will be designated the "stand alone" parts. If no "stand alone" parts can be determined, then the infrastructure improvements cannot be partially accepted. If "stand alone" parts are identified, the developer may achieve partial acceptance of the infrastructure improvements for these parts by.

(a) Dividing the entire subdivision into projects for each of the "stand alone" parts (each project will have its own separate pre-construction), or

(b) Assuring construction of required infrastructure in accordance with Section 9 of SSCAFCA's Drainage Policy.

The financial guarantee option selected by the developer during the Pre-Design Conference will be made a part of the Pre-Design Conference minutes. The minutes will also indicate the requirement (prior to acceptance of "stand alone" parts by the City/SSCAFCA) that the developer or agent must provide to the City/SSCAFCA all data, such As-Built drawings, GASB 34/35 information, etc., necessary for the City/SSCAFCA operation and maintenance of the improvements being accepted. Warranty will commence at the time a Certification of Completion and Acceptance Letter is issued by the City/SSCAFCA. If bonding is used, written acceptance will not occur until the bond is obtained by the developer for the City's/SSCAFCA's benefit.

Outcome:

- Minutes of the meeting are prepared delineating the items discussed and agreements reached for the signature of the participants.

Design and Review Phase

Step 3: Design Development

Consulting engineer prepares plans according to guidelines of the Pre-Design Conference, incorporating any required materials into the infrastructure design. Construction Plans and Specifications must be prepared in accordance with current Standard Specifications unless otherwise approved by the City/SSCAFCA.

Step 4: Preliminary Design Review by SSCAFCA

Submit material to the Development Services Division (DSD). The DSD will route plans to SSCAFCA for review and comment.

Outcome:

- SSCAFCA will review plans for completeness and notifies the DSD of any missing items/information before scheduling a review by SSCAFCA staff.

- SSCAFCA reviews plans for quality and content. If the submittal is unacceptable, areas of major concern are identified and the submittal is returned to the City Engineer/Consulting Engineer for corrections.

Step 5: ***Incorporation of Comments and Preparation of Final Plans and Estimate Sheet***

The Consulting Engineer must either incorporate the SSCAFCA review comments into the proposed final plans or propose acceptable alternatives. City /SSCAFCA must review and approve all proposed alternatives. The Consulting Engineer prepares an estimate of the quantities of materials and associated costs for the project.

Step 6: ***Review of Final Plans and Estimate Sheet***

DSD submits final drawings with all corrections (with redlines) as required and all additional reports, technical studies and related documents to SSCAFCA. The complete package of required submittals must be received prior to SSCAFCA signing the final plans.

Outcome:

- SSCAFCA signs plans if the plans comply with all of their requirements.

CONSTRUCTION PHASE:

Pre-Construction Phase

During this phase, all arrangements required to complete the construction contract between the developer and the contractor, or City/SSCAFCA and contractor, are identified.

Step 1: Contract Documentation

Complete the necessary documents and submit to SSCAFCA.

Submittal Requirements:

Developer Provides:

- Copy of the subdivision approval agreement and financial guarantee

- Copy of construction contract with licensed contractor reflecting work detailed on approved plans and engineers estimate
- Insurance certificate
- Performance/Warranty Bond (or equal) and Labor and Material Payment Bond
- Other items if applicable:
- Copy of necessary easements
- Copy of State Highway Department permits
- Copy of SWPPP and USEPA Stormwater NOI
- Copy of utility company encroachment permits
- Copy of USACE 404 permit
- MRGCD approval and License Agreements
- Approval of other entities or utilities as necessary for project scope
- Reproducible copy of recorded plat for plan set as required
- Construction Schedule
- Material Testing Schedule

Outcome:

- SSCAFCA verifies that scope of work on contract is same as shown on the approved engineers estimate and plan set.

Step 2: Contractor Obtains Permits

The contractor must obtain all the required City permits before release of the work order.

Step 2A: Progress Inspections

For each inspection listed below a request shall be made by contractor to SSCAFCA 48 hours in advance.

1. Preconstruction meeting
2. After construction staking and storm water quality best management practices have been completed and prior to any earthwork
3. Concrete/shotcrete placement

a. Final subgrade is prepared PRIOR TO ANY REBAR/STEEL BEING PLACED
b. Final placement of rebar/steel PRIOR TO CONCRETE/SHOTCRETE
c. First placement of concrete/shotcrete

4. Placement of storm drain pipe (Water truck and compaction equipment must be on-site during placement
    a. Staking complete and prior to excavation
    b. Final subgrade preparation
    c. Placement of pipe prior to backfill
    d. Placement of lateral connection to mainstem
    e. Completion of pipe
5. Outlet/inlet structures
    a. Construction staking complete
    b. Final subgrade
    c. Form and rebar
    d. Concrete/shotcrete
    e. Rip rap
6. Channel Construction
    a. Construction staking complete
    b. Subgrade preparation complete
    c. Rebar installation
    d. Concrete/shotcrete placement
    e. Inlet placement

***Step 3*: Interim Inspection**

NOTE: PARTIAL ACCEPTANCE...If partial acceptance is being requested per conditions of the Pre-Design Conference, (Step 2), the following steps and instructions generally apply except that "Final Acceptance" is identified as "Partial Acceptance". Under partial acceptance, a financial guarantee may be reduced, however the agreement cannot be released until all required drainage infrastructure on the approved Infrastructure List is completed and accepted. If the drainage infrastructures come under the jurisdiction of the Office of the State Engineer (OSE), the following items must be provided by the developer prior to final acceptance by SSCAFCA/City:

1. Written approval by OSE
2. Transfer of ownership to SSCAFCA
3. Transfer of all documents required by OSE

INITIATING ACTION

SSCAFCA Inspector and contractor shall conduct an interim inspection to determine if the work is ready for final inspection. Contractor will contact SSCAFCA seven (7) working days in advance to schedule an inspection.

Outcome:

• If project is ready for final inspection, the developer's construction inspector schedules final inspection seven (7) working days in advance with SSCAFCA Inspector.

• If project is not ready for final inspection, contractor must complete necessary work prior to requesting final inspection.

<u>Step 4</u>: Completion of Record Drawings

Record Drawings and applicable data must be furnished to the SSCAFCA Inspector prior to the final inspection. If not available, final inspection will be delayed until they are available. Information required on the Record Drawings are detailed below.

RECORD DRAWING INFORMATION

A. Record Drawings with elevations, finished contours and dimensions for the following improvements:

- Permanently marked benchmark based on NAVD 88 and located on or very near the facility
- Pond(s) (include as-built volumes, e.g., 100 year water surface elevation, and flow information)
- Pipe inlet(s) and outlet(s) (include as-built capacity calculations)
- Rundown(s) (including the required inlet dimension)
- Graphic depiction of complete storm drainage system on 1 sheet. Size of sheet to be agreed upon with SSCAFCA
- Spillways(s) (including the required outlet dimensions)
- Channel(s)
- Flowlines
- Erosion control and stormwater pollution prevention structure(s)
- Temporary drainage, erosion control and stormwater pollution prevention facilities required for phased development
- Retaining and/or garden wall(s)
- Other features critical to the drainage facility
- Cost of drainage improvements proposed for maintenance
- Operation and maintenance schedule and pictures taken during the construction

B. All testing results

C. Professional Certification (See Section 7 for standard certification language):

(1) Engineer's stamp dated and signed accompanied with a statement indicating substantial compliance with the approved construction drawings and/or deficiencies with recommended corrections.

(2) The surveying associated with the certification must be performed by a professional engineer and/or surveyor in accordance with the "New Mexico Engineering and Surveying Practice Act" as amended and any standards adopted by the State board of Registration.

<u>Step 5</u>: Final Inspection (applies to partial or entire acceptance)

INITIATING ACTION

- Developer/Engineer contacts SSCAFCA's Construction Inspector and requests a final inspection. SSCAFCA's Senior Drainage Engineer and Executive Engineer must be invited to attend the Final Inspection.

- Responsible party (See Step 4) completes Record Drawings or furnishes red-line marked up prints to SSCAFCA showing Record Drawings conditions. A hard copy of the Record Drawings must be provided to the City/SSCAFCA at the time a final inspection is requested.

Note: A water test may be required at the final inspection to verify drainage system operation.

Outcome:

- SSCAFCA schedules final inspection with the contractor, consulting engineer, developer, and all City staff concerned with the project.

- At final inspection, a list of discrepancies (punch list) is prepared by the consulting Engineer, or inspecting agency, which is given to the contractor for correction. A copy is sent to the developer, SSCAFCA, and City staff concerned with the project.

- If both, SSCAFCA and the Engineer, find the constructed facility to be sufficient to function properly, a certificate of substantial completion can be issued.

INITIATING ACTION

Contractor:

- Completes work on punch-list items within 30 days.

- Notifies SSCAFCA inspector and all affected parties when ready for verification.

Outcome:

SSCAFCA inspector verifies that discrepancies are corrected.

INITIATING ACTION

Contractor sends SSCAFCA Inspector final quantities sheet and invoices.

Outcome:

SSCAFCA prepares a Letter of Infrastructure Construction Completion after receiving the following:

- Final quantities sheet
- Invoices from the contractor
- Copy of recorded plat and/or copy of recorded easement
- Revised Record Drawings (One hard copy) including a reproducible mylar and electronic file copy (e.g.) an Auto-Cad/PDF file in a format acceptable to SSCAFCA submitted on a compact disc (CD)
- Copy of all test results, construction pictures and copy of certifications on a compact disc (CD)
- Submittal of a performance bond in accordance with Section 11 of SSCAFCA's Drainage Policy.
- Final quantities sheet, cost of drainage improvements (including the cost of the land) and invoices from the contractor.
- A letter from owner/developer/engineer requesting acceptance from the Executive Engineer for warranty period to begin.

Upon acceptance by SSCAFCA the one year warranty period commences for the structure. The developer/contractor shall be responsible for O&M during the warranty period. Before SSCAFCA takes over responsibility for O&M there will be a post warranty inspection to insure that the structure condition is as designed and that there are no outstanding issues.

Note: All storm water management measures and facilities shall be maintained by the owner of the property or a homeowners association, unless a dedication of the storm water management system has been required and accepted by SSCAFCA/City, in which case, the City/SSCAFCA shall be responsible for maintenance after the warranty period ends.