

**Master Development Drainage Plan (MDDP) for
Cathedral Ridge at Garden of the Gods Club
and Final Drainage Report for
Cathedral Ridge at Garden of the Gods Club Filing No. 3A**

August 2010

Prepared for:

Sunrise Company

Colorado Springs, CO 80904

Prepared by:

Rockwell Consulting, Inc.
1955 N. Union, Suite 200
Colorado Springs, CO 80909
475-2575

Project #08-005

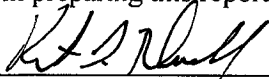
183367

**Master Development Drainage Plan (MDDP) for
Cathedral Ridge at Garden of the Gods Club
and Final Drainage Report for
Cathedral Ridge at Garden of the Gods Club Filing No. 3A**

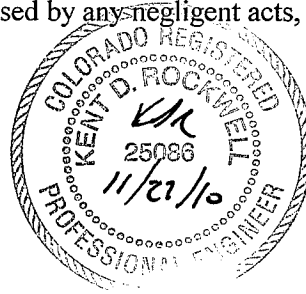
DRAINAGE PLAN STATEMENTS

ENGINEER'S STATEMENT

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City/County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.



Kent D. Rockwell, P.E.



DEVELOPER'S STATEMENT

I, the developer, have read and will comply with all the requirements specified in this drainage report and plan.

Sunrise Company

BY: _____



DATE _____

Dirk Gosda

TITLE: President, Garden of the Gods Club LLC
Sunrise GGC Management LLC, Manager

ADDRESS: 3310 Mesa Road, Suite 150
Colorado Springs, CO 80904

CITY OF COLORADO SPRINGS

Filed in accordance with Section 7-7-906 of the code of the City of Colorado Springs, 2001, as amended.



FOR THE CITY ENGINEER

12/1/10

DATE

The location of the existing public 48" RCP in lots 22-26 on Cathedral Rock View is not acceptable & will need to be re-located on future drainage reports & development plans

SBK
KOR

**Master Development Drainage Plan (MDDP) for
Cathedral Ridge at Garden of the Gods Club
and Final Drainage Report for
Cathedral Ridge at Garden of the Gods Club Filing No. 3A**

GENERAL LOCATION AND DESCRIPTION

The Cathedral Ridge at Garden of the Gods Club Development is located west of Mesa Road and east of 30th street, just south of the Garden of the Gods Club, and consists of approximately 40 acres. The Cathedral Ridge at Kissing Camels Development is part of the original Gateway Vista Development. The Cathedral Ridge Development excludes those lots previously platted as Gateway Subdivision Filing No. 10 along the western ridge line overlooking 30th Street.

The site lies within Sections 34 and 35, Township 13 South, Range 67 West of the 6th P.M., El Paso County, Colorado (see Figure 1). The site is bound on the north by Garden of the Gods Club, on the east by Mesa Road, on the south by Villa Sierra and on the west by the platted ridge lots, open space and 30th Street.

The entire site lies within the Camp Creek Drainage Basin and will be developed as single-family residential lots. Existing ground cover consists of native grasses and vegetation.

Cathedral Ridge at Garden of the Gods Club Filing No. 2 contains 7.567 acres of which 2.736 acres was previously platted.

The Cathedral Ridge at Garden of the Gods Club plat, containing 11.810 acres of lots along the western ridge of this parcel has been submitted with a previous drainage letter. This area is also included as part of this study.

REFERENCES

1. Camp Creek Drainage Study (October, 1964), prepared by United Western Engineers, Colorado Springs, CO.
2. Preliminary and Final Drainage Report and Plan, La Mesa Vista (June, 1994), Addenda (December, 1994); prepared by Leigh Whitehead and Associates, Colorado Springs, CO.
3. Drainage Report for La Posada Del Sol Subdivision (February, 1984), prepared by URS/NES, Colorado Springs, CO.
4. Amendment to the Drainage Report for Garden of the Gods Club Subdivision No. 1 Replat (December, 1994), prepared by Rockwell-Minchow Consultants, Inc., Colorado Springs, CO.
5. Master Development Drainage Plan (MDDP) for Gateway Vista and Final Drainage Report for Gateway Vista Filing No. 10, prepared by Rockwell Minchow Consultants, Inc., February 2002.

SOILS

According to the US Department of Agriculture Soil Conservation Services Soil Survey of El Paso County, Gateway Subdivision is underlain by the Ascalon Series (Soil 3) which is classified as a Hydrologic Group "B" soil and by the Chaseville/Midway Series (Soil 18) which is classified as a Hydrologic Group "A/D" soil, respectively (see Figure 1). Hydrologic Group "B" was used for runoff calculation purposes.

FLOOD PLAIN STATEMENT

According to the Federal Emergency Management Agency (FEMA), as depicted on Flood Insurance Rate Map (FIRM) 08041CO513 F & 08041CO726 F (March 1997), no portion of this site lies within a designated Flood Plain. See map in Appendix.

DRAINAGE DESIGN CRITERIA

The current City of Colorado Springs and El Paso County Drainage Criteria was used in the preparation of this report. The Rational Method was used to determine the runoff quantities as required for basins containing less than 100 acres. Peak runoff was determined for both the 5 year and 100 year frequency storms.

HISTORIC DRAINAGE ANALYSIS

This portion of the report analyzes the historic runoff quantities and patterns for the site. The area has been depicted on the Historic Drainage Plan by eight (8) basins. Following is a description of each basin and the proposed runoff patterns and drainage improvements. The following described basins and flows were taken directly from the previous approved MDDP for Gateway Vista.

These basins describe the drainage condition prior to the Gateway Vista development and not necessarily today's condition. This better reflects what discharges are allowable to off-site areas.

Basin H-1 encompasses 24.6 off-site acres on the east side of Mesa Road. Runoff rates of 32.0 cfs (5 yr) and 67.9 (100 yr) currently sheet flow to the existing roadside ditch and then travel to a low point near the south end of the basin. An existing 30" CMP crosses under Mesa Road, discharging to the southwest at this point.

Basin H-2 contains 3.8 acres at the southeast end of the site. Runoff rates of 3.7 cfs (5 yr) and 8.7 cfs (100 yr) currently flow to a swale running to the south in the basin where an existing 2'x2' grated inlet collects a portion of the flows at DP #H-1. Runoff rates of 32.7 cfs (5 yr) and 72.5 cfs (100 yr) reach the design point. This compares to 11 cfs (5yr) and 34 cfs in the La Posada Del Sol Subdivision Drainage Report.

Basin H-3 consists of 5.7 acres at the southeast end of the site. Runoff rates of 3.4 cfs (5 yr) and 8.8 cfs (100 yr) currently sheet flow onto Villa Sierra to the south.

Basin H-4 covers 8.0 acres at the north end of the site encompassing a large portion of the Garden of the Gods Club. Runoff rates of 18.0 cfs (5 yr) and 39.0 cfs (100 yr) are currently collected by a series of inlets and pipes discharging at the south end of the Basin via an existing 30" RCP.

Basin H-5 covers 13.4 acres near the north end of the site encompassing a developed and undeveloped portion of the Garden of the Gods Club. Runoff rates of 19.8 cfs (5 yr) and 50.9 cfs (100 yr) currently sheet flow and shallow swale flow onto undeveloped land to the south.

Basin H-6 encompasses 10.6 acres on the northwest end of the site. Runoff rates of 9.3 cfs (5 yr) and 24.1 (100 yr) currently sheet flow offsite to the west (to 30th street).

Basin H-7 contains 5.5 acres at the southwest end of the site. Runoff rates of 5.6 cfs (5 yr) and 13.5 (100 yr) currently sheet flow offsite to the west (to 30th street).

Basin H-8 contains 41.8 acres covering a majority of the site. Runoff rates of 25.1 cfs (5 yr) and 65.8 (100 yr) currently travels as sheet flow and in shallow swales to the south, then offsite to the west at the south end of the Basin.

DEVELOPED DRAINAGE ANALYSIS

This portion of the report analyzes the developed runoff quantities and patterns for the site. The area has been depicted on the Developed Drainage Plan by forty five (45) basins, including several off-site basins. Following is a description of the basins and the proposed runoff patterns and drainage improvements.

Basin 1 consists of 2.96 acres on the east side of Mesa Road at the extreme north end of the site, covering part of Kissing Camels Estates. Runoff rates of 5.1 cubic feet per second (cfs) during the 5-year storm event (5 yr) and 10.3 cfs during the 100-year storm event (100 yr) will travel as street flow to a proposed 12' on-grade inlet. The inlet will collect 3.2 cfs (5 yr)/5.1 cfs (100 yr) and discharge to the west via an existing 18" RCP. Bypass flows will continue into Basin 4.

Basin 2 covers 0.99 acres on the west side of Mesa Road at the extreme north end of the site. Runoff rates of 2.8 cfs (5 yr) and 5.8 (100 yr) cfs will travel as street flow to a proposed 10' on-grade inlet. The inlet will collect 1.8 cfs (5 yr)/3.1 cfs (100 yr) and discharge to the south via an existing 19"x30" HERCP. Bypass flows will enter Basin 6.

Basin 3 covers 0.29 acres on the west side of Mesa Road in front of the Garden of the Gods Club at the north end of the site. Runoff rates of 1.1 cfs (5 yr) and 2.0 (100 yr) cfs will travel as street flow to a proposed 6' on-grade inlet. The inlet will collect 0.7 cfs (5 yr)/1.0 cfs (100 yr) and discharge to the south via an existing 19"x30" HERCP. Bypass flows will enter Basin 6.

Basin 4 contains 1.71 acres on the east side of Mesa Road across from the Garden of the Gods Club at the north end of the site. Runoff rates of 4.3 cfs (5 yr) and 8.4 (100 yr) cfs plus Basin 1 bypass flows will travel as street flow to a proposed 10' sump inlet. The inlet will collect all of the runoff and discharge to the southwest via an existing 24" RCP.

Basin 5 encompasses 0.41 acres on the west side of Mesa Road in front of the Garden of the Gods Club at the north end of the site. Runoff rates of 1.4 cfs (5 yr) and 2.8 (100 yr) cfs will travel as street flow to an existing 6' on-grade inlet. The inlet will collect 0.9 cfs (5 yr)/1.4 cfs (100 yr) and discharge to the south via an existing 19"x30" HERCP. Bypass flows will enter Basin 9.

The southwest corner of Mesa Road and Kissing Camels Drive where the pipes from Basins 4 and 5 join is Design Point No. 1 (DP #1). Runoff rates of 13.4 cfs (5 yr) and 25.8 (100 yr) cfs generated from Basins 1 through 5 will exit the design point via an existing 30" RCP to the south.

Basin 6 covers 8.1 acres at the north end of the site encompassing a large portion of the Garden of the Gods Club. Runoff rates of 16.7 cfs (5 yr) and 34.0 cfs (100 yr) are currently collected by a series of inlets and pipes discharging at the south end of the basin via an existing 30" private RCP. The 30" RCP discharges into a swale at the rear of the existing hotel rooms and flows southerly toward Treeline View.

Basin 7 contains 7.87 acres at the southwest end of the Garden of the Gods Club site encompassing a portion of the existing and future Garden of the Gods Club. Runoff rates of 15.4 cfs (5 yr) and 30.2 cfs (100 yr) reach the south end of this basin. A 30" private storm sewer pipe will be extended beyond the north end of Treeline View at DP #2 to collect the flows generated from Basins 6 and 7. Total flows reaching Design Point #2 from these two basins are 29.1 cfs (5 yr) and 60.2 cfs (100 yr).

It is unclear exactly how Basins 6 and 7 will be developed in the future and how flows will be routed to the system within Treeline View. Therefore, in addition to the 30" private RCP be stubbed out at Design Point #2, for the purposed of this report a 10' sump inlet and 30" RCP will be stubbed into the southeast corner of Basin 7 to potentially collect flows reaching that point. This system may or may not be required in the future depending on how this area is to be developed and is basically a redundant system.

Basin 8 contains 1.91 acres at the southeast end of the Garden of the Gods Club site. Runoff rates of 3.9 cfs (5yr) and 7.6 cfs (100yr) are generated from this basin. A 15" private RCP pipe will be extended into this basin from the proposed system in Treeline View to collect these flows.

A portion of the aforementioned 30" RCP conveying flows southerly from DP #1 along the west side of Mesa Road and then westerly through the future Cathedral Ridge at Garden of the Gods Club Development will have to be re-routed as part of the Cathedral Ridge Phase 3 development. The pipe along Mesa Road will remain in place; however, the system extending westerly toward DP #2 will have to be relocated into Cascading Park View through Basins 10 and 11.

Basin 9 contains 3.96 acres on the west side of Mesa Road north and south of Kissing Camels Drive. Runoff rates of 4.9 cfs (5 yr) and 10.7 cfs (100 yr) are generated from this basin. Bypass flows from Basin 5 will enter this basin from the north. Total street flows of 5.4 cfs (5 yr) and 12.1 cfs (100 yr) will travel south in Mesa Road to an existing 10' inlet where the inlet will collect 3.4 cfs (5 yr)/5.8 cfs (100 yr) cfs and discharge to the west via a proposed 24" RCP. The bypass flows of 2.0 (5 yr) and 6.3 (100 yr) will enter basin 19 as street flows.

Basin 10 consists of 2.58 acres of existing landscape area along Mesa Road along with proposed single family residential lots along the west side of Mesa Road. This basin generates flows of 6.2 cfs (5 yr) and 12.8 cfs (100 yr). These flows reach the internal street and flow southerly within Cathedral Park View. At a minimum slope of 1.5%, Cathedral Park View has a 5 year street capacity of 8.4 cfs per side. A 4' private sump inlet will collect these flows.

Likewise, flow rates of 6.2 cfs (5 yr) and 13.7 cfs (100 yr) generated from Basin 11 flow southerly within the west side of Cathedral Park View. A second 4' private sump inlet will be installed at the low point of Basin 11 to collect these flows. A proposed public 36" RCP will convey the collected flows from Basins 10 and 11 southerly along with the flows within the existing 30" RCP extending westerly from Mesa Road. These flows will be conveyed southerly and then westerly along the north side of Stately View to the existing inlet.

Basin 12 consists of 1.43 acres of single family residential lots along the east side of Garden Meadow View. Flows of 3.9 cfs (5 yr) and 8.4 cfs (100 yr) will flow southerly within the east side of Garden Meadow View toward Treeline View. Garden Meadow View at a minimum slope of 4% has a 5 year street capacity of 13.8 cfs/side. This is adequate to convey these flows.

The west half of Garden Meadow View comprises the 0.75 acre Basin 13. Runoff rates of 2.0 cfs (5 yr) and 4.4 cfs (100 yr) flow southerly within the west half of Garden Meadow View. These flows combine with the flows from Basin 12 and enter Treeline View as street flows. Combined total flows of 5.9 cfs (5 yr) and 12.8 cfs (100 yr) from Basins 12 and 13 enter Treeline View.

Basin 14 consists of 2.47 acres of single family residential lots along the east side of Treeline View. Runoff rates of 5.9 cfs (5 yr) and 12.4 cfs (100 yr) flow southerly within the east side of Treeline View. Treeline View at a minimum slope 2% has a 5 year street capacity of 15.9 cfs per side. A private 20' on-grade inlet will be placed at the downstream end of this basin to collect flow rates of 4.7 (5 yr) and 8.6 cfs (100 yr). A private 18" RCP will convey these flows from this inlet to the existing private 36" RCP within Treeline View.

The remaining flows bypass this inlet will approach an existing private 10' on-grade inlet just south of the Treeline and Garden Meadow View intersection.

Total flows of 7.1 cfs (5 yr) and 16.6 cfs (100 yr) reach this inlet from Basins 12, 13 and 14. This existing inlet will collect flows of 3.9 (5 yr) and 6.2 cfs (100 yr). The flows bypassing this inlet will enter Basin 18 as street flows.

Basin 15 is located along the west side of Treeline View and generates flows of 3.9 cfs (5 yr) and 9.2 cfs (100 yr). These flows enter Basin 17 as street flows.

Basin 16 consists of 1.41 acres of single family residential lots. Flows of 2.4 cfs (5 yr) and 5.4 cfs (100 yr) reach an existing private 4' sump inlet at the end of Tract A. An existing private 18" RCP conveys these flows southerly.

Approximately 0.44 acres along the west side of Treeline comprises Basin 17. The flow rates of 1.3 cfs (5 yr) and 2.7 cfs (100 yr) generated from this basin along with the flows generated from Basin 15 reach an existing private 10' inlet. This inlet collects flows of 3.2 cfs (5 yr) and 5.1 cfs (100 yr). The flows bypassing this inlet enter Basin 21 as street flows.

Basin 18 is located along the east side of Treeline and consists of single family residential units. This 0.90 acre basin generates flows of 2.4 cfs (5 yr) and 5.2 cfs (100 yr). These flows combine with the flows bypassing the existing inlet just downstream of Basins 12, 13 and 14 and flow to the sump inlet at the low point of Basins 18 and 19.

Basin 19 consists of 2.32 acres along the north side of Stately View and generates flows of 5.4 cfs (5 yr) and 12.2 cfs (100 yr). Additional flows enter this basin from Basin 9. Total flows of 7.4 cfs (5 yr) and 18.5 cfs (100 yr) reach the sump inlet within Basin 19 from the east. Flows of 5.6 cfs (5 yr) and 15.6 cfs (100 yr) reach this inlet from the north. The existing 10' sump inlet at the low point of this basin will collect these flows. An existing 30" RCP pipe will convey total flows of 45.1 cfs (5 yr) and 93.3 cfs (100 yr) southwesterly from this inlet to DP#3.

Proposed Cathedral Ridge Filing No. 3A, consisting of lots 13 through 18 is within Basins 18 and 19. These 6 lots will be the first 6 lots constructed within the overall Cathedral Ridge Development. Approximately 300 feet of the proposed 36" RCP storm sewer pipe within Cathedral Park View along with the 36" RCP connection to the existing inlet at the northeast corner of Stately and Treeline View will be constructed as part of Filing No. 3A.

Including flows collected at Design Point #2, Design Point #3 and Basins 15, 17 and 22, total flows of 82.3 cfs (5 yr) and 171.8 cfs (100 yr) reach Design Point #4. An existing 42" RCP will convey these flows southerly.

Approximately 1.62 acres along the south side of Stately View comprises Basin 20. Flows of 4.9 cfs (5 yr) and 10.2 cfs (100 yr) flow southerly within the east side of Treeline View to an existing 8' on-grade inlet. This inlet collects flows of 2.4 cfs (5 yr) and 3.5 cfs (100 yr). The flows bypassing this inlet enter Basin 27A as street flows.

Basin 21 consists of 2.18 acres along the west side of Treeline View. Flows of 3.4 cfs (5 yr) and 8.9 cfs (100 yr) generated from this basin along with flows bypassing the inlet within Basin 17 flow southerly within the west side of Treeline View. These flows reach an existing 8' on-grade inlet located at the south end of Basin 21. This inlet collects flows of 2.5 cfs (5 yr) and 4.5 cfs (100 yr). Flows bypassing this inlet enter Basin 28 as street flows.

Basin 22 contains 3.38 acres on the east side of Mesa Road south of Kissing Camels Drive. Runoff rates of 7.9 cfs (5 yr) and 16.3 cfs (100 yr) will travel south in Mesa Road to a pair of existing 8' inlets connected by an existing 18" RCP and discharging to the west via a proposed 24" RCP. These two inlets collect a total of 5.7 cfs (5 yr) and 8.9 cfs (100 yr). The remaining flows will enter Basin 24.

The total flows reaching Design Point #5 are 87.9 cfs (5 yr) and 186.6 (100 yr). The majority of these flows will be conveyed within the existing 42" RCP and the remaining flows being conveyed with the street.

Basin 23 consists of 1.44 acres along the east side of Mesa Road. Flow rates of 4.1 cfs and 8.1 cfs are generated from this basin during the 5 and 100 year storms, respectively. These flows are collected within an existing pipe and conveyed southerly within an 18" CMP along the east side of Mesa Road into Basin 24.

Basin 24 contains 7.14 acres on the east side of Mesa Road along the Mesa Water Treatment Plant. Runoff rates of 13.2 cfs (5 yr) and 26.4 cfs (100 yr) are generated from this basin. These flows along with the bypass flows from Basin 22 will travel southerly in Mesa Road reaching the roadside swale along the east side of Mesa Road. The runoff reaches an existing 30" CMP. Total flows of 19.5 cfs (5 yr) and 41.9 (100 yr) will enter Basin 30.

Basin 25 is located along the west side of future Cathedral Park View and generates flows of 1.8 cfs (5 yr) and 4.1 cfs (100 yr). These flows reach the south end of Cathedral Park View where a private 4' sump inlet will collect these flows along with the flows generated from Basin 26.

Basin 26 consists of 1.46 acres of future single family residential lots within the Cathedral Ridge Development along the east side of future Cathedral Park View south of Stately View. Runoff rates of 3.4 cfs (5 yr) and 7.8 cfs (100 yr) also flow southerly within Cathedral Park View reaching the same private 4' sump inlet. A private 18" RCP will convey these flows southerly into the system within Treeline View.

Approximately 1.75 acres of future residential lots along the east side of Treeline View comprises Basin 27A. Runoff rates of 4.2 cfs (5 yr) and 9.2 cfs (100 yr) flow southerly within Treeline to an existing private 8' sump inlet at the low point of this basin. Additional runoff reaches this same sump inlet from Basin 27B. Including bypass flows from Basin 20, this inlet collects a total of 13.2 cfs (5 yr) and 29.8 cfs (100 yr).

These flows will be conveyed across Treeline View within an existing 24" RCP joining with the flows collected by the inlets within Basins 25 and 26 ultimately reaching Design Point #6.

Basin 28 encompasses 2.64 acres on the west side of Treeline View just southwest of the Treeline and Stately View intersection. Runoff rates of 5.0 cfs (5 yr) and 11.7 cfs (100 yr) plus bypass flows from Basin 21 will travel south to a proposed 15' sump inlet where all of the runoff will be collected and discharge to the south with the relocated 48" RCP.

Total flows of 100.7 cfs (5 yr) and 214.0 cfs (100 yr) reach DP#6. A public 48" RCP will convey these flows southerly.

Basin 29 covers 6.15 acres along the southwest end of the site, making up the back of several proposed lots. Runoff rates of 11.2 cfs (5 yr) and 24.9 cfs (100 yr) will travel overland to the west. This compares to combined historic runoff rates of 30.7 cfs (5yr) and 80 cfs (100yr) from Basins H-7 + H-8.

Basin 30 contains 3.68 acres on the east side of Mesa Road along Camelback Village and the water treatment plant. Runoff rates of 8.8 cfs (5 yr) and 18.5 cfs (100 yr) will travel to an existing 18"/24" CMP and roadside swale on the east side of Mesa Road, eventually reaching the existing 30" CMP crossing under Mesa Road to the west.

Basin 31 covers 4.23 acres on the east side of Mesa Road encompassing a portion of the City Mesa Water Treatment Plant. Runoff rates of 8.4 cfs (5 yr) and 17.8 cfs (100 yr) will travel overland and in a swale to an existing 24" RCP. The 24" RCP crosses Mesa Road to the southwest to an existing 4' sump inlet, then discharges to an existing swale to the west via a 30" RCP.

Basin 32 consists of 1.03 acres of future single family residential lots and generates flows of 2.8 cfs (5 yr) and 6.1 cfs (100 yr). These flows reach a proposed private 10' sump inlet at the Cathedral Rock View and Rock Garden View intersection.

Basin 33 is located just south of Basin 32 consisting of 1.33 acres of future single family residential lots. Flows of 3.3 cfs (5 yr) and 7.1 cfs (100 yr) reach the south of this basin as street flows. These flows are directed toward the same 10' sump inlet.

Basin 34 consists of 1.96 acres of future single family residential lots just west of Basin 32 and 33. Flows of 4.2 cfs (5 yr) and 9.5 cfs (100 yr) generated from this basin will also reach the proposed 10' sump inlet.

Basin 35 contains 2.10 acres on the east side of Cascading Rock View in the south central portion of the site. Runoff rates of 5.2 cfs (5 yr) and 11.3 cfs (100 yr) will travel southerly as street flows to a proposed 8' on-grade inlet. This inlet will collect flows of 2.8 (5 yr) and 4.3 (100 yr) and the remaining flows will enter Basin 41 as street flows.

Runoff rates of 2.8 cfs (5 yr) and 6.8 cfs (100 yr) are generated from the 2.20 acre Basin 36 which is located along the west side of Cascading Rock View. A second 8' on-grade inlet will collect flows of 1.8 cfs (5 yr) and 3.3 cfs (100 yr). The bypass flows will enter Basin 42.

Basin 37 is located just downstream of Basin 32, 33 and 34. This 1.02 acre basin generates flows of 2.7 cfs (5 yr) and 5.6 cfs (100 yr). These flows will be directed to a proposed 24" RCP flared end section. These flows will be conveyed directly to the existing 48" RCP.

Basin 38 contains 0.32 acres directly south of Basin 37. Flows of 1.0 cfs (5 yr) and 2.0 cfs (100 yr) generated from this basin will also reach the flared end section extending into the basin.

Basin 39 covers 3.31 acres on the west side of Mesa Road encompassing most of La Mesa Vista and some City owned open space. Runoff rates of 4.2 cfs (5 yr) and 9.2 cfs (100 yr) will travel to an existing swale running through the basin reaching DP #8. Total flows at DP #8 are 30.3 (5 yr) and 67.8 (100 yr).

Basin 40 contains 2.57 acres at the far south end of the site. Runoff rates of 5.7 cfs (5 yr) and 12.4 cfs (100 yr) generated from this basin reach a 4' sump inlet at the low point of this basin.

Additional flow rates of 5.0 cfs (5 yr) and 10.9 cfs are generated from Basin 41 which is located along the east side of Cathedral Rock View. As stated above, flows of 2.4 cfs (5 yr) and 7.0 cfs (100 yr) enter Basin 41 from Basin 35. These combined flows reach a 6' sump inlet at the low points of Basin 41.

Basin 42 is located along the west side of Cathedral Rock View and generates flows of 1.1 cfs (5 yr) and 2.6 cfs (100 yr). These flows along with the flows bypassing the inlet within Basin 36 reach a proposed 4' sump inlet at the south end of Basin 42.

The 0.75 acre Basin 43 generates additional flows of 2.2 cfs (5 yr) and 4.7 cfs (100 yr). These flows a 4' sump inlet. A 24" RCP will convey the collected flows from Basins 40 and 43 westerly to the proposed inlet at the low point of Basin 42.

Flow rates of 11.5 cfs (5 yr) and 24.9 cfs (100 yr) from Basins 40, 41, 42 and 43 reach DP #9. These flows will be conveyed within a proposed 30" RCP northerly to the existing 48" RCP.

Basin 44 consists 1.30 acres at the far south end of the site. Runoff rates of 3.5 cfs (5 yr) and 7.5 cfs (100 yr) will travel overland onto the existing apartment site to the south. This compares to historic runoff rates of 3.4 cfs (5 yr) and 8.8 cfs (100yr) from Basin H-3. Water from downspouts will be directed toward the east as much as possible.

Runoff rates of 152.0 cfs (5 yr) and 323.0 cfs (100 yr) reach Design Point #10. An existing 48" RCP and 54" RCP was constructed as part of the original Gateway Vista Development from DP#10 westerly down the slope to 30th street and to the existing channel. The existing 48" and 54" pipes parallel an existing water easement, crosses 30th Street and parallels Water Street to the existing concrete lined channel in the middle of 31st Street. The outlet into the existing channel will provide for a concrete lining between the existing concrete side slopes.

Per the Gateway Vista MDDP, "A peak runoff rate of 1997 cfs (100yr) is shown at the Water Street crossing per the Camp Creek Drainage Study. This area was included in the overall study for Camp Creek. The Camp Creek study also showed residential development north of Chambers Street that is now park land which would reduce the peak runoff by a small amount at Water Street. The 1964 study also indicates that the street crossings at Water Street, Fontanero Street, and Bijou Street are undersized to convey the 100 year storm. The City of Colorado Springs has identified a public works project for the Camp Creek Channel, but no date has been determined for construction."

The channel has adequate capacity to carry the developed flows. Using simple addition of the flows of 1,997 cfs and 258 cfs = 2,320cfs for the total runoff at the outfall, the depth of water in the channel is just over 4 feet. This leaves approximately 2' of freeboard during the 100 year storm. Calculations are provided in the appendix. The existing channel consists of concrete side slopes and a natural earth bottom which has degraded over the years. The Gateway Vista outfall will consist of grouted rip-rap lining in the bottom of the channel and cutoff walls to hold the channel bottom in place. This will all be detailed on the storm sewer construction drawings to be reviewed and approved by the city prior to construction.

Street capacities will not be exceeded within the proposed development under this drainage plan and report. On-site streets will be private residential and will be 28' fl-fl with Type 3 vertical curb & gutter. Mesa Road has a median divided section, 17' fl-fl each side, with Type 3 vertical curb and gutter on the median and Type 1 vertical curb and gutter on the exterior.

This report and plan is to serve as a guide for the Cathedral Ridge Development beyond Cathedral Ridge Filing No. 3A. Additional Drainage Reports will be required with each additional filing/plat submittal. Storm sewer layout and sizing may vary with actual layout and design.

The Lot Owner/Home Builder/Home Owner will be responsible for individual lot drainage.

PROPOSED FACILITIES (Construction Cost Estimate):

Following is a cost estimate of the proposed drainage facilities required for this development. All proposed public drainage facilities will be reimbursable, private facilities will be non-reimbursable.

Cathedral Ridge Filing No. 3A – Public; Non-Reimbursable Due to Relocation:

36" RCP	406 L.F. @ \$ 75.00/L.F.	\$30,450.00
Type 1 Manhole	1 Ea. @ \$5,000.00/Ea.	\$ 5,000.00
Core Existing Inlet	1 L.S. @ \$2,000.00/L.S.	<u>\$ 2,000.00</u>
	Sub-total:	\$ 37,450.00
	10% Engineering & Contingency:	<u>\$ 3,745.00</u>
	TOTAL:	\$ 41,195.00

Cathedral Ridge Phase 3 (North) - Future Public; Non-Reimbursable Due to Relocation:

30" RCP	550 L.F. @ \$ 56.00/L.F.	\$ 30,800.00
36" RCP	235 L.F. @ \$ 75.00/L.F.	\$ 17,625.00
Type 1 Manhole	2 Ea. @ \$5,000.00/Ea.	\$ 10,000.00
	Sub-total:	\$ 58,425.00
	10% Engineering & Contingency:	<u>\$ 5,842.50</u>
	TOTAL:	\$ 64,267.50

Cathedral Ridge Phase 3 (North) - Future Private; Non-reimbursable:

4' D-10-R Inlet	2 Ea. @ \$4,000.00/Ea.	\$ 4,000.00
10' D-10-R Inlet	1 Ea. @ \$4,500.00/Ea.	\$ 4,500.00
20' D-10-R Inlet	1 Ea. @ \$6,500.00/Ea.	\$ 6,500.00
15" RCP	165 L.F. @ \$ 33.00/L.F.	\$ 5,445.00
18" RCP	95 L.F. @ \$ 35.00/L.F.	\$ 3,325.00
24" RCP	200 L.F. @ \$ 45.00/L.F.	\$ 9,000.00
30" RCP	60 L.F. @ \$ 56.00/L.F.	\$ 3,360.00
Grated Inlet	1 L.S. @ \$2,000.00/Ea.	\$ 2,000.00
Type 2 Manholes	2 L.S. @ \$2,000.00/Ea.	\$ 4,000.00
Remove 18" RCP	190 L.F. @ \$ 25.00/L.F.	\$ 4,750.00
Remove 30" RCP	560 L.F. @ \$ 35.00/L.F.	\$ 19,600.00
Plug Inlet	1 L.S. @ \$1,500.00/Ea.	\$ 1,500.00
Remove Type 1 Manhole	1 L.S. @ \$2,500.00/Ea.	\$ 2,500.00
Street Repair	1 L.S. @ \$5,000.00/Ea.	<u>\$ 5,000.00</u>
	Sub-total:	\$ 75,480.00
	10% Engineering & Contingency:	<u>\$ 7,548.00</u>
	TOTAL:	\$ 83,028.00

PROPOSED FACILITIES (Construction Cost Estimate):

Following is a cost estimate of the proposed drainage facilities required for this development. All proposed public drainage facilities will be reimbursable, private facilities will be non-reimbursable.

Cathedral Ridge Filing No. 3A – Public; Non-Reimbursable Due to Relocation:

36" RCP	406 L.F. @ \$ 75.00/L.F.	\$30,450.00
Type 1 Manhole	1 Ea. @ \$5,000.00/Ea.	\$ 5,000.00
Core Existing Inlet	1 L.S. @ \$2,000.00/L.S.	<u>\$ 2,000.00</u>
	Sub-total:	\$ 37,450.00
	10% Engineering & Contingency:	<u>\$ 3,745.00</u>
	TOTAL:	\$ 41,195.00

Cathedral Ridge Phase 3 (North) - Future Public; Non-Reimbursable Due to Relocation:

30" RCP	550 L.F. @ \$ 56.00/L.F.	\$ 30,800.00
36" RCP	235 L.F. @ \$ 75.00/L.F.	\$ 17,625.00
Type 1 Manhole	2 Ea. @ \$5,000.00/Ea.	\$ 10,000.00
	Sub-total:	\$ 58,425.00
	10% Engineering & Contingency:	<u>\$ 5,842.50</u>
	TOTAL:	\$ 64,267.50

Cathedral Ridge Phase 3 (North) - Future Private; Non-reimbursable:

4' D-10-R Inlet	2 Ea. @ \$4,000.00/Ea.	\$ 4,000.00
10' D-10-R Inlet	1 Ea. @ \$4,500.00/Ea.	\$ 4,500.00
20' D-10-R Inlet	1 Ea. @ \$6,500.00/Ea.	\$ 6,500.00
15" RCP	165 L.F. @ \$ 33.00/L.F.	\$ 5,445.00
18" RCP	95 L.F. @ \$ 35.00/L.F.	\$ 3,325.00
24" RCP	200 L.F. @ \$ 45.00/L.F.	\$ 9,000.00
30" RCP	60 L.F. @ \$ 56.00/L.F.	\$ 3,360.00
Grated Inlet	1 L.S. @ \$2,000.00/Ea.	\$ 2,000.00
Type 2 Manholes	2 L.S. @ \$2,000.00/Ea.	\$ 4,000.00
Remove 18" RCP	190 L.F. @ \$ 25.00/L.F.	\$ 4,750.00
Remove 30" RCP	560 L.F. @ \$ 35.00/L.F.	\$ 19,600.00
Plug Inlet	1 L.S. @ \$1,500.00/Ea.	\$ 1,500.00
Remove Type 1 Manhole	1 L.S. @ \$2,500.00/Ea.	\$ 2,500.00
Street Repair	1 L.S. @ \$5,000.00/Ea.	<u>\$ 5,000.00</u>
	Sub-total:	\$ 75,480.00
	10% Engineering & Contingency:	<u>\$ 7,548.00</u>
	TOTAL:	\$ 83,028.00

Cathedral Ridge Phase 4 (Central) - Future Private; Non-Reimbursable:

4' D-10-R Inlet	1 Ea. @ \$4,000.00/Ea.	\$ 4,000.00
15' D-10-R Inlet	1 Ea. @ \$5,500.00/Ea.	\$ 5,500.00
18" RCP	190 L.F. @ \$ 35.00/L.F.	\$ 6,650.00
48" RCP	20 L.F. @ \$ 130.00/L.F.	\$ 2,600.00
Street Repair	1 L.S. @ \$7,000.00/Ea.	\$ 7,000.00
Core Existing Inlet	1 L.S. @ \$2,000.00/L.S.	\$ 2,000.00

10% Engineering & Contingency: \$ 2,775.00

TOTAL: \$ 30,525.00

Cathedral Ridge Phase 5 (South) - Future Private; Non-Reimbursable:

4' D-10-R Inlet	3 Ea. @ \$4,000.00/Ea.	\$ 12,000.00
6' D-10-R Inlet	1 Ea. @ \$4,100.00/Ea.	\$ 4,100.00
8' D-10-R Inlet	2 Ea. @ \$4,200.00/Ea.	\$ 8,400.00
18" RCP	45 L.F. @ \$35.00/L.F.	\$ 1,575.00
24" RCP	350 L.F. @ \$45.00/L.F.	\$ 15,750.00
30" RCP	190 L.F. @ \$56.00/L.F.	\$ 10,640.00
24" FES	1 Ea. @ \$800/Ea.	\$ 800.00

Sub-total: \$ 53,265.00

10% Engineering & Contingency: \$ 5,326.50

TOTAL: \$ 58,591.50

Cathedral Ridge Phase 5 (South) - Public; Non-Reimbursable Due to Relocation:

48" RCP	680 L.F. @ \$130.00/L.F.	\$ 88,400.00
Type 1 Manhole	2 Ea. @ \$5,000.00/Ea.	\$ 10,000.00
Remove 48" RCP	560 L.F. @ \$70.00/L.F.	\$ 39,200.00

Sub-total: \$137,600.00

10% Engineering & Contingency: \$ 13,760.00

TOTAL: \$151,360.00

DRAINAGE FEES

The Cathedral Ridge Development is located within the Camp Creek Drainage Basin. The total area of the development to be platted/re-platted is approximately 40 acres. A portion of the site was previously platted as Garden of the God's Club Subdivision No. 1 Replat, Kissing Camel's Mesa Subdivision No. 1 and Gateway Subdivision Filing No. 10. The site will be platted with multiple plats as required for build-out. Drainage Reports will be completed for each additional filing at that time, with fees calculated in individual reports.

The 2010 Drainage, Bridge and Pond Fees are as follows. We understand that several public facilities have been constructed on this site, but no credits have been established for those public facilities. The status of those credits will be investigated. However, for Cathedral Ridge at Garden of the Gods Filing No. 3A the drainage fees will be paid in cash.

Cathedral Ridge at Garden of the Gods Filing No. 3A contains 1.928 acres.

Cathedral Ridge at Garden of the Gods Filing No. 3A:

1.928 Acres

Drainage Fee: \$ 1,778.00/ac.x 1.928ac = \$ 3,427.98

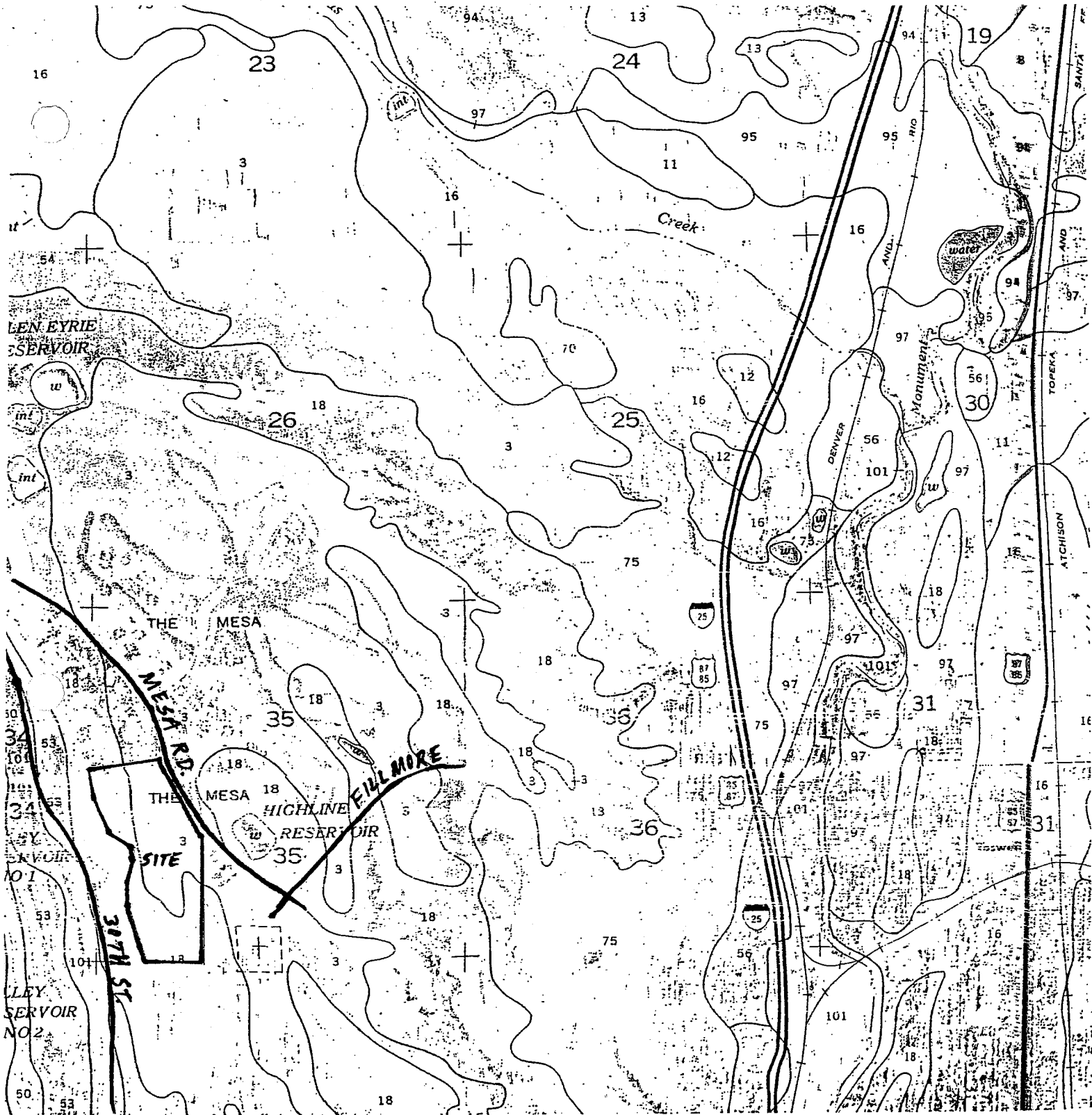
WATER QUALITY

Cathedral Ridge Development was zoned PUD, mainly to establish setbacks conducive to the housing product to be constructed within this development. However, the residential lots to be platted are equivalent to or much larger than normal R1-6000 lots with densities much less than the normal residential subdivisions.

In addition, the Cathedral Ridge area was previously master planned, a portion of the area was previously platted and storm sewer was previously installed. To retrofit the system to accommodate water quality measures would be difficult.

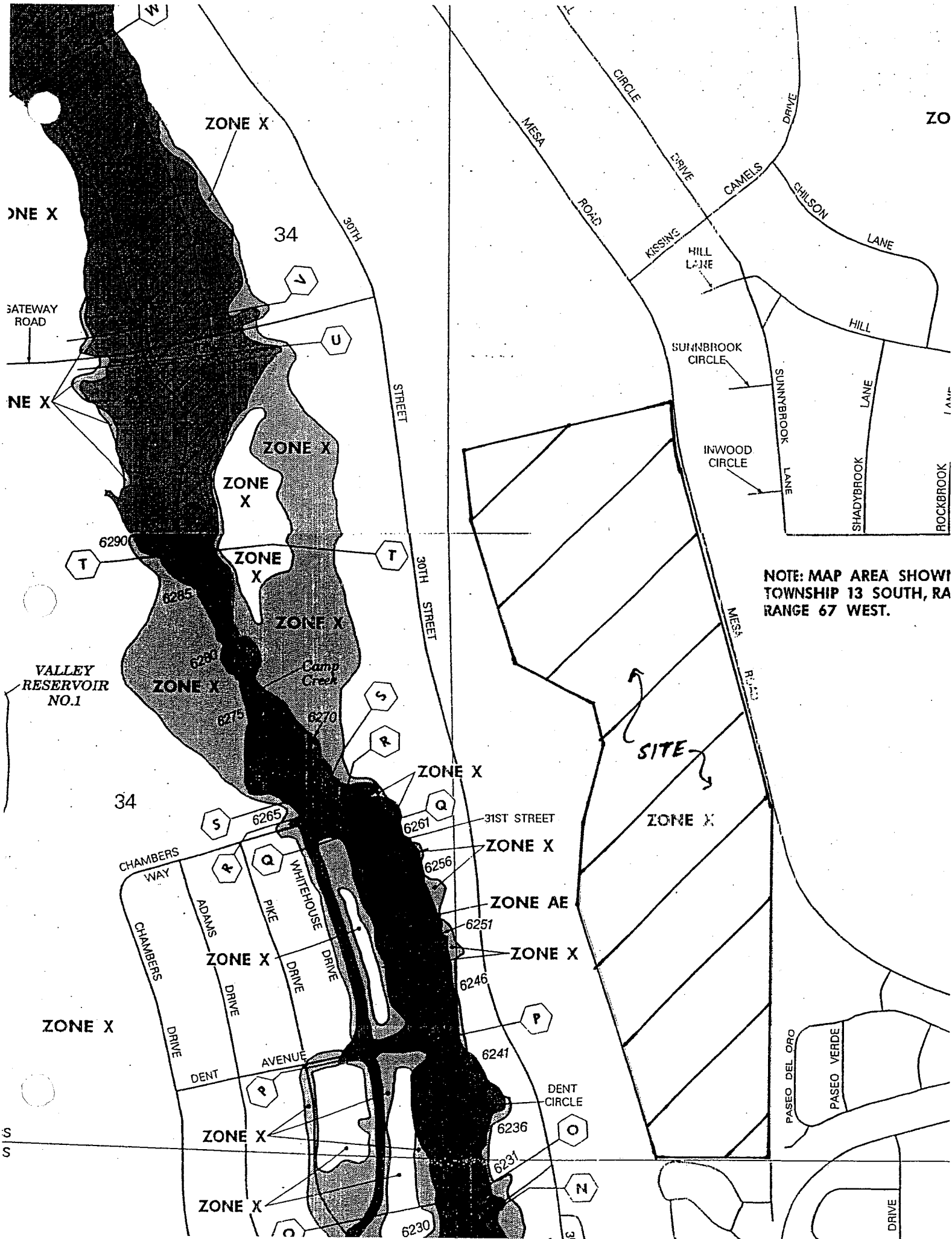
Therefore, through discussions with City Engineering, it was determined that due to the large lot configuration with Cathedral Ridge, water quality measures would not be required.

APPENDIX



N
1" = 2000'

FIGURE 1



NOTE: MAP AREA SHOWS TOWNSHIP 13 SOUTH, RANGE 67 WEST.

TABLE 5-1

RECOMMENDED AVERAGE RUNOFF COEFFICIENTS AND PERCENT IMPERVIOUS

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS	"C" FREQUENCY			
		10		100	
		A&B*	C&D*	A&B*	C&D*
Business					
Commercial Areas	95	0.90	0.90	0.90	0.90
Neighborhood Areas	70	0.75	0.75	0.80	0.80
Residential					
1/8 Acre or less	65	0.60	0.70	0.70	0.80
1/4 Acre	40	0.50	0.60	0.60	0.70
1/3 Acre	30	0.40	0.50	0.55	0.60
1/2 Acre	25	0.35	0.45	0.45	0.55
1 Acre	20	0.30	0.40	0.40	0.50
Industrial					
Light Areas	80	0.70	0.70	0.80	0.80
Heavy Areas	90	0.80	0.80	0.90	0.90
Parks and Cemeteries	7	0.30	0.35	0.55	0.60
Playgrounds	13	0.30	0.35	0.60	0.65
Railroad Yard Areas	40	0.50	0.55	0.60	0.65
Undeveloped Areas					
Historic Flow Analysis- Greenbelts, Agricultural	2	0.15	0.25	0.20	0.30
Pasture/Meadow	0	0.25	0.30	0.35	0.45
Forest	0	0.10	0.15	0.15	0.20
Exposed Rock	100	0.90	0.90	0.95	0.95
Offsite Flow Analysis (when land use not defined)	45	0.55	0.60	0.65	0.70
Streets					
Paved	100	0.90	0.90	0.95	0.95
Gravel	80	0.80	0.80	0.85	0.85
Drive and Walks	100	0.90	0.90	0.95	0.95
Roofs	90	0.90	0.90	0.95	0.95
Lawns	0	0.25	0.30	0.35	0.45

* Hydrologic Soil Group

9/30/90

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: 31st STREET CHANNEL

Comment: RIP-RAP BOTTOM/CONCRETE SIDES

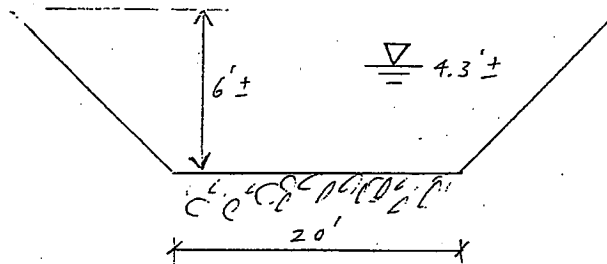
Solve For Depth

Given Input Data:

Bottom Width.....	20.00 ft
Left Side Slope..	1.50:1 (H:V)
Right Side Slope.	1.50:1 (H:V)
Manning's n.....	0.028
Channel Slope....	0.0300 ft/ft
Discharge.....	2255.00 cfs 2315

Computed Results:

Depth.....	4.28 ft	4.35
Velocity.....	19.93 fps	20.10
Flow Area.....	113.74 sf	115.41
Flow Top Width...	32.85 ft	33.05
Wetted Perimeter.	35.44 ft	35.69
Critical Depth...	6.23 ft	6.33
Critical Slope...	0.0077 ft/ft	
Froude Number....	1.89 (flow is Supercritical)	1.90



HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: H-1
 AREA: 24.6
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	24.60	0.50	0.60	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>24.60</u>			<u>100%</u>

COMPOSITE: C5= 0.50 C100= 0.60

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	3		7.81		6.51
Swale	5000	3	4.5	18.52	4.7	17.73
				<u>26.33</u>		<u>24.24</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5
I100
2.6 in/hr
4.6 in/hr

PEAK FLOW: Q-CIA in cfs

Q5
Q100
32.0 cfs
67.9 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: H-2
 AREA: 3.8
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	3.80	0.35	0.45	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	3.80			100%

COMPOSITE: C5= 0.35 C100= 0.45

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	2.5		17.95		15.56
Swale	700	2	2.5	4.67	2.7	4.32
				<u>22.62</u>		<u>19.88</u>
Tc Total:				22.62		19.88

Intensity, I (inches/hr) from Fig 5-1

I5 **I100**
2.8 in/hr 5.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 **Q100**
3.7 cfs 8.7 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: H-3
 AREA: 5.7
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	5.70	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>5.70</u>			<u>100%</u>

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	2		21.90		19.33
Swale	1200	2	3	6.67	2.7	7.41
				<u>28.57</u>		<u>26.73</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5

2.4 in/hr

I100

4.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

3.4 cfs

Q100

8.8 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: H-4
 AREA: 8
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	8.00	0.55	0.65	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>8.00</u>			<u>100%</u>

COMPOSITE: C5= 0.55 C100= 0.65

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	125	6		6.37		5.21
Street	400	3	3	2.22	3.2	2.08
Pipe	800	2	10	1.33	12	1.11
Tc Total:				9.92		8.40

Intensity, I (inches/hr) from Fig 5-1

I5

4.1 in/hr

I100

7.5 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

18.0 cfs

Q100

39.0 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	H-5
AREA:	13.4
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	13.40	0.40	0.55	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	13.40			100%

COMPOSITE: C5= 0.40 C100= 0.55

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		10.41		8.18
Street	750	3.5	5	2.50	5.2	2.40
				12.91		10.59

Intensity, I (inches/hr) from Fig 5-1

I5

3.7 in/hr

I100

6.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

19.8 cfs

Q100

50.9 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	H-6
AREA:	10.6
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	10.60	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>10.60</u>			<u>100%</u>

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	8		13.86		12.23
Tc Total:				13.86		12.23

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.5 in/hr</u>	<u>6.5 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>9.3 cfs</u>	<u>24.1 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	H-7
AREA:	5.5
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	5.50	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	5.50			100%

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	4		10.06		8.88
Tc Total:				10.06		8.88

Intensity, I (inches/hr) from Fig 5-1

I5	I100
4.1 in/hr	7.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	Q100
5.6 cfs	14.2 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: H-8
 AREA: 41.8
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Existing Conditon	41.80	0.25	0.35	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>41.80</u>			<u>100%</u>

COMPOSITE: C5= 0.25 C100= 0.35

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	2.5		20.35		17.95
Swale	2500	3	5	8.33	5.2	8.01
				<u>28.68</u>		<u>25.97</u>

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>2.4 in/hr</u>	<u>4.5 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>25.1 cfs</u>	<u>65.8 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	1
AREA:	2.96
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Bldg	1.18	0.90	0.95	39.86%
Open Space	1.78	0.25	0.35	60.14%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>2.96</u>			<u>100%</u>

COMPOSITE: C5= 0.51 C100= 0.59

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	4		10.06		8.88
Swale	1000	3	3.3	5.05	3.5	4.76
				<u>15.11</u>		<u>13.64</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.4 in/hr</u>	<u>5.9 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>5.1 cfs</u>	<u>10.3 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 2
AREA: 0.99
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Landscaping	0.28	0.25	0.35	28.28%
Building/Parking	0.71	0.90	0.95	71.72%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	0.99			100%

COMPOSITE: C5= 0.72 C100= 0.78

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	10	2		4.00		3.53
Street	1100	3	3.3	5.56	3.5	5.24
				<u>9.55</u>		<u>8.77</u>
Tc Total:				9.55		8.77

Intensity, I (inches/hr) from Fig 5-1

I5 4.0 in/hr I100 7.5 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 2.8 cfs Q100 5.8 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 3
 AREA: 0.29
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Streets	0.2	0.90	0.95	68.97%
Landscaping	0.09	0.25	0.35	31.03%
	0	0.90	0.95	0.00%
	0	0.00	0.00	0.00%
	<u>0.29</u>			<u>100%</u>

COMPOSITE: C5= 0.70 C100= 0.76

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	10	6		2.78		2.46
Swale	400	3	3.3	2.02	3.5	1.90
				<u>4.80</u>		<u>4.36</u>
Tc Total:				4.80		4.36

Intensity, I (inches/hr) from Fig 5-1

I5

I100

5.2 in/hr

9.0 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

1.1 cfs

2.0 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	<u>4</u>
AREA:	<u>1.71</u>
SOIL TYPE:	<u>A & B</u>

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Streets	1.2	0.90	0.95	70.18%
Landscaping	0.51	0.25	0.35	29.82%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	1.71			100%

COMPOSITE: C5= 0.71 C100= 0.77

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		8.94		7.89
Street	900	3	3.3	4.55	3.5	4.29
				<u>13.49</u>		<u>12.18</u>
Tc Total:				13.49		12.18

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.6 in/hr

6.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

4.3 cfs

8.4 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 5
 AREA: 0.41
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Streets	0.29	0.90	0.95	70.73%
Landscaping	0.12	0.25	0.35	29.27%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>0.41</u>			<u>100%</u>

COMPOSITE: C5= 0.71 C100= 0.77

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	10	2		4.00		3.53
Street	520	3.5	3.8	2.28	4	2.17
				<u>6.28</u>		<u>5.69</u>
Tc Total:				6.28		5.69

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>4.9 in/hr</u>	<u>8.9 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>1.4 cfs</u>	<u>2.8 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	6
AREA:	8.1
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Buildng/Parking	4.00	0.90	0.95	49.38%
Landscaping	4.10	0.25	0.35	50.62%
	0.00	0.00	0.00	0.00%
	<u>0.00</u>	0.00	0.00	<u>0.00%</u>
	8.10			100%

COMPOSITE: C5= 0.57 C100= 0.65

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	125	6		9.84		8.68
Street	400	2	2.8	2.38	3	2.22
Pipe	800	2	10	1.33	12	1.11
Tc Total:				13.55		12.01

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.6 in/hr

6.5 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

16.7 cfs

34.0 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 7
 AREA: 7.87
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Building/Parking	3.93	0.90	0.95	49.94%
Landscaping	3.94	0.25	0.35	50.06%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>7.87</u>			<u>100%</u>

COMPOSITE: C5= 0.57 C100= 0.65

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Street	750	3.5	3.8	3.29	4	3.13
				<u>15.93</u>		<u>14.28</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.4 in/hr</u>	<u>5.9 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>15.4 cfs</u>	<u>30.2 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 8
 AREA: 1.91
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Building/Parking	1.02	0.90	0.95	53.40%
Landscaping	0.89	0.25	0.35	46.60%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	1.91			100%

COMPOSITE: C5= 0.60 C100= 0.67

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Street	750	3.5	3.8	3.29	4	3.13
				<u>15.93</u>		<u>14.28</u>
Tc Total:				15.93		14.28

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.4 in/hr

5.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

3.9 cfs

7.6 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	9
AREA:	3.61
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Street	1.27	0.90	0.95	35.18%
Landscaping	2.34	0.25	0.35	64.82%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	3.61			100%

COMPOSITE: C5= 0.48 C100= 0.56

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	200	3.5		14.87		13.12
Street	1900	2.5	3.1	10.22	3.3	9.60
				25.08		22.71
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5	I100
2.6 in/hr	4.8 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	Q100
4.5 cfs	9.7 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 10
 AREA: 3.08
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.79	0.60	0.70	90.58%
Open Space	0.29	0.25	0.35	9.42%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	3.08			100%

COMPOSITE: C5= 0.57 C100= 0.67

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	75	4		5.46		4.44
Street	1000	2.5	3.1	5.38	3.3	5.05
				<u>10.84</u>		<u>9.49</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5

I100

4.0 in/hr

7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

7.0 cfs

14.6 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	11
AREA:	3.34
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	3.34	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>3.34</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	150	2		9.11		7.29
Street	1150	2.5	3	6.39	3.2	5.99
				<u>15.50</u>		<u>13.28</u>
Tc Total:				15.50		13.28

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.4 in/hr

6.2 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

6.8 cfs

14.5 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 12
 AREA: 1.37
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.37	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.37</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	40	2		4.70		3.76
Street	650	4.5	4.3	2.52	4.5	2.41
				<u>7.22</u>		<u>6.17</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5 4.6 in/hr I100 8.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 3.8 cfs Q100 8.1 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	13
AREA:	0.72
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.72	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>0.72</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	40	2		4.70		3.76
Street	650	4.5	4.3	2.52	4.5	2.41
				<u>7.22</u>		<u>6.17</u>
Tc Total:				7.22		6.17

Intensity, I (inches/hr) from Fig 5-1

I5

I100

4.6 in/hr

8.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

2.0 cfs

4.2 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	14
AREA:	2.57
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.57	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<hr style="width: 100%;"/>			<hr style="width: 100%;"/>
	2.57			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		5.26		4.21
Street	1050	3	3.3	5.30	3.5	5.00
				<hr style="width: 100%;"/>		<hr style="width: 100%;"/>
Tc Total:				10.56		9.21

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<hr style="width: 100%;"/>	<hr style="width: 100%;"/>
4.0 in/hr	7.1 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<hr style="width: 100%;"/>	<hr style="width: 100%;"/>
6.2 cfs	12.8 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 15
 AREA: 2.91
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/2 Acre Residential	2.51	0.35	0.45	86.25%
Streets	0.4	0.90	0.95	13.75%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>2.91</u>			<u>100%</u>

COMPOSITE: C5= 0.43 C100= 0.52

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		10.03		8.65
Street	700	3.1	3.5	3.33	3.7	3.15
				<u>13.37</u>		<u>11.80</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5 I100
3.6 in/hr 7.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 Q100
4.5 cfs 11.2 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 16
 AREA: 1.41
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.6	0.60	0.70	42.55%
1/2 Ac Residential	0.81	0.35	0.45	57.45%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.41</u>			<u>100%</u>

COMPOSITE: C5= 0.46 C100= 0.56

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	140	2		11.33		9.57
Street	200	1.5	2.8	1.19	3	1.11
				<u>12.52</u>		<u>10.68</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.7 in/hr

6.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

2.4 cfs

5.4 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 18
AREA: 0.90
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.9	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0.90			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	80	2		6.65		5.32
Street	300	2.3	3	1.67	3.2	1.56
Tc Total:				8.32		6.88

Intensity, I (inches/hr) from Fig 5-1

I5 4.4 in/hr I100 8.3 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 2.4 cfs Q100 5.2 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 19
 AREA: 1.08
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.08	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.08</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		7.44		5.95
Street	300	2.7	3.1	1.61	3.3	1.52
				<u>9.05</u>		<u>7.47</u>
Tc Total:				9.05		7.47

Intensity, I (inches/hr) from Fig 5-1

I5

4.1 in/hr

I100

8.0 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

2.7 cfs

Q100

6.0 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	20
AREA:	1.10
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.1	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.10</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	20	2		3.33		2.66
Street	500	3.4	3.8	2.19	4	2.08
				<u>5.52</u>		<u>4.74</u>
Tc Total:				5.52		4.74

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>5.0 in/hr</u>	<u>9.0 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>3.3 cfs</u>	<u>6.9 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 21
 AREA: 2.23
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.23	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	2.23			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		7.44		5.95
Street	600	2.7	3.1	3.23	3.3	3.03
				<u>10.66</u>		<u>8.98</u>
Tc Total:				10.66		8.98

Intensity, I (inches/hr) from Fig 5-1

I5 3.9 in/hr I100 7.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 5.2 cfs Q100 11.6 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	22
AREA:	3.38
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Multi-Family	1.83	0.70	0.80	54.14%
Street	0.83	0.90	0.95	24.56%
Landscaping	0.72	0.25	0.35	21.30%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	3.38			100%

COMPOSITE: C5= 0.65 C100= 0.74

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	25	3		5.53		4.88
Street	1550	2.2	3.3	7.83	3.5	7.38
				<u>13.36</u>		<u>12.26</u>
Tc Total:				13.36		12.26

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.6 in/hr</u>	<u>6.5 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>7.9 cfs</u>	<u>16.3 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	23
AREA:	1.44
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Building/Parking	0.66	0.90	0.95	45.83%
Landscaping	0.78	0.25	0.35	54.17%
	0	0.00	0.00	0.00%
	<u>0</u>	0.00	0.00	<u>0.00%</u>
	1.44			100%

COMPOSITE: C5= 0.55 C100= 0.63

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	40	10		3.05		2.63
Street	100	3	3.3	0.51	3.5	0.48
				<u>3.56</u>		<u>3.10</u>
Tc Total:				3.56		3.10

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>5.2 in/hr</u>	<u>9.0 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>4.1 cfs</u>	<u>8.1 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 24
 AREA: 7.14
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Building/Parking	4.18	0.60	0.70	58.54%
Landscaping	1.98	0.25	0.35	27.73%
Street	0.98	0.90	0.95	13.73%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	7.14			100%

COMPOSITE: C5= 0.54 C100= 0.64

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Street	750	2.7	3.2	3.91	3.4	3.68
				<u>16.55</u>		<u>14.83</u>
Tc Total:				16.55		14.83

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.4 in/hr

5.8 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

13.2 cfs

26.4 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 26
 AREA: 3.70
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	3.7	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	3.70			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		7.44		5.95
Street	800	2.5	3.1	4.30	3.3	4.04
				<u>11.74</u>		<u>9.99</u>
Tc Total:				11.74		9.99

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.8 in/hr</u>	<u>7.0 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>8.4 cfs</u>	<u>18.1 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 27
 AREA: 1.79
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.79	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.79</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		7.44		5.95
Street	500	2	2.8	2.98	3	2.78
				<u>10.41</u>		<u>8.73</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5 <u>4.0 in/hr</u>	I100 <u>7.5 in/hr</u>
-------------------------------	---------------------------------

PEAK FLOW: Q-CIA in cfs

Q5 <u>4.3 cfs</u>	Q100 <u>9.4 cfs</u>
-----------------------------	-------------------------------

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	29
AREA:	6.93
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/2 Acre Residential	7.58	0.35	0.45	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>7.58</u>			<u>100%</u>

COMPOSITE: C5= 0.35 C100= 0.45

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	150	4		10.87		9.42
				<u>3.90</u>		<u>7.10</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>5.2 in/hr</u>	<u>9.0 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>12.6 cfs</u>	<u>28.1 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 30
 AREA: 3.68
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Building/Parking	1.52	0.90	0.95	41.30%
Landscaping	2.16	0.25	0.35	58.70%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>3.68</u>			<u>100%</u>

COMPOSITE: C5= 0.52 C100= 0.60

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	15		6.50		5.74
Street	130	3	3.3	0.66	3.5	0.62
				<u>7.16</u>		<u>6.36</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5

4.6 in/hr

I100

8.4 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

8.8 cfs

Q100

18.5 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 31
 AREA: 4.23
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Landscaping	2.53	0.25	0.35	59.81%
Future Buildings/Parking	1.7	0.90	0.95	40.19%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>4.23</u>			<u>100%</u>

COMPOSITE: C5= 0.51 C100= 0.59

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	4		10.06		8.88
Street	200	3	3.5	0.95	3.7	0.90
				<u>11.01</u>		<u>9.78</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.9 in/hr</u>	<u>7.1 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>8.4 cfs</u>	<u>17.8 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	32
AREA:	2.65
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.65	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>2.65</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	150	2		9.11		7.29
Street	500	2.5	3.2	2.60	3.4	2.45
				<u>11.71</u>		<u>9.74</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.9 in/hr</u>	<u>7.0 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>6.2 cfs</u>	<u>13.0 cfs</u>

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	33
AREA:	0.96
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.96	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>0.96</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		5.26		4.21
Street	500	2.5	3.2	2.60	3.4	2.45
				<u>7.86</u>		<u>6.66</u>
Tc Total:				7.86		6.66

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>4.5 in/hr</u>	<u>8.3 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>2.6 cfs</u>	<u>5.6 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 34
 AREA: 1.61
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	1.61	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.61</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	80	4		5.29		4.23
Street	450	2	2.8	2.68	3	2.50
				<u>7.97</u>		<u>6.73</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5

I100

4.5 in/hr

8.2 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

4.3 cfs

9.2 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 35
 AREA: 4.58
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.27	0.60	0.70	49.56%
1/2 Acre Residential	1.47	0.35	0.45	32.10%
Pond	0.84	0.25	0.35	18.34%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	4.58			100%

COMPOSITE: C5= 0.46 C100= 0.56

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		6.78		5.73
Street	350	2	2.8	2.08	3	1.94
				<u>8.86</u>		<u>7.67</u>
Tc Total:				8.86		7.67

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>4.3 in/hr</u>	<u>8.0 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>9.0 cfs</u>	<u>20.4 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 36
 AREA: 3.31
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/2 Acre Residential	3.31	0.35	0.45	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>3.31</u>			<u>100%</u>

COMPOSITE: C5= 0.35 C100= 0.45

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	2.5		17.95		15.56
				<u>17.95</u>		<u>15.56</u>
Tc Total:				17.95		15.56

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.1 in/hr

5.8 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

3.6 cfs

8.6 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	37
AREA:	1.64
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/2 Acre Residential	0.75	0.60	0.70	45.73%
Open Space	0.89	0.25	0.35	54.27%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.64</u>			<u>100%</u>

COMPOSITE: C5= 0.41 C100= 0.51

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	5		5.36		4.59
Swale	200	3	2.7	1.23	2.9	1.15
				<u>6.60</u>		<u>5.74</u>
Tc Total:				6.60		5.74

Intensity, I (inches/hr) from Fig 5-1

I5

4.8 in/hr

I100

8.6 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

3.2 cfs

Q100

7.2 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	38
AREA:	1.61
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
Street	0.8	0.90	0.95	49.69%
Landscaping	0.81	0.25	0.35	50.31%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>1.61</u>			<u>100%</u>

COMPOSITE: C5= 0.57 C100= 0.65

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		5.54		4.75
Street	300	2	2.8	1.79	3	1.67
				<u>7.33</u>		<u>6.42</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>4.6 in/hr</u>	<u>8.3 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>4.2 cfs</u>	<u>8.7 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	39
AREA:	2.07
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/2 Acre Residential	2.07	0.35	0.45	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>2.07</u>			<u>100%</u>

COMPOSITE: C5= 0.35 C100= 0.45

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	50	2		7.89		6.84
				<u>7.89</u>		<u>6.84</u>
Tc Total:				7.89		6.84

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>4.5 in/hr</u>	<u>8.3 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>3.3 cfs</u>	<u>7.7 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	40
AREA:	2.57
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.57	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>2.57</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	140	3		7.70		6.16
Street	850	2	2.8	5.06	3	4.72
				<u>12.76</u>		<u>10.88</u>
Tc Total:				12.76		10.88

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.7 in/hr</u>	<u>6.9 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>5.7 cfs</u>	<u>12.4 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	41
AREA:	2.26
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	2.26	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	2.26			100%

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	200	2		10.52		8.42
Street	400	1.8	2.7	2.47	2.9	2.30
				12.99		10.71

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.7 in/hr</u>	<u>6.9 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>5.0 cfs</u>	<u>10.9 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 42
AREA: 1.01
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/2 Acre Residential	1.01	0.35	0.45	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	1.01			100%

COMPOSITE: C5= 0.35 C100= 0.45

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	200	2		15.78		13.68
Street	400	1.8	2.7	2.47	2.9	2.30
Tc Total:				18.25		15.97

Intensity, I (inches/hr) from Fig 5-1

I5 3.1 in/hr
I100 5.7 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 1.1 cfs
Q100 2.6 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	43
AREA:	0.75
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.75	0.60	0.70	100.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	0	0.00	0.00	0.00%
	<u>0.75</u>			<u>100%</u>

COMPOSITE: C5= 0.60 C100= 0.70

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	20	2		3.33		2.66
Street	550	2	2.8	3.27	3	3.06
				<u>6.60</u>		<u>5.72</u>
Tc Total:				6.60		5.72

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>4.9 in/hr</u>	<u>8.9 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>2.2 cfs</u>	<u>4.7 cfs</u>

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: 44
 AREA: 1.30
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1/8 Acre Residential	0.65	0.60	0.70	50.00%
1/3 Acre Residential	0.65	0.50	0.60	50.00%
	0	0.00	0.00	0.00%
	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	1.30			100%

COMPOSITE: C5= 0.55 C100= 0.65

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	80	4		6.35		5.29
				<u>6.35</u>		<u>5.29</u>
Tc Total:				6.35		5.29

Intensity, I (inches/hr) from Fig 5-1

I5 4.9 in/hr I100 8.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 3.5 cfs Q100 7.5 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#1
AREA: 6.36
SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
1	2.96	0.51	0.59	46.54%
2	0.99	0.72	0.78	15.57%
3	0.29	0.70	0.76	4.56%
4	1.71	0.71	0.77	26.89%
5	0.41	0.71	0.77	6.45%
	<u>6.36</u>			<u>100%</u>

COMPOSITE: C5= 0.62 C100= 0.69

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	4		10.06		8.88
Swale	1000	3	3.3	5.05	3.5	4.76
				<u>15.11</u>		<u>13.64</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5 3.4 in/hr I100 5.9 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 13.4 cfs Q100 25.8 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#2A
 AREA: 15.97
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
6	8.10	0.57	0.65	50.72%
7	7.87	0.57	0.65	49.28%
	0.00	0.00	0.00	0.00%
	0.00	0.60	0.67	0.00%
	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	15.97			100%

COMPOSITE: C5= 0.57 C100= 0.65

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	750	3.5	3.8	3.29	4	3.13
Pipe Flow	550	3	10	0.92	12	0.76
Tc Total:				16.85		15.05

Intensity, I (inches/hr) from Fig 5-1

I5	I100
3.2 in/hr	5.8 in/hr

PEAK FLOW: Q-CIA in cfs

Q5	Q100
29.1 cfs	60.2 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#2B
 AREA: 24.24
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#1	6.36	0.62	0.69	26.24%
DP#2	15.97	0.57	0.65	65.88%
8	1.91	0.60	0.67	7.88%
	0.00	0.60	0.00	0.00%
	0.00	0.00	0.00	0.00%
	<u>24.24</u>			<u>100%</u>

COMPOSITE: C5= 0.59 C100= 0.66

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	750	3.5	3.8	3.29	4	3.13
Pipe Flow	550	3	10	0.92	12	0.76
				<u>16.85</u>		<u>15.05</u>

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.2 in/hr</u>	<u>5.8 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>45.4 cfs</u>	<u>93.0 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	DP#3
AREA:	31.81
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#2B	24.24	0.59	0.66	76.20%
12	1.37	0.60	0.70	4.31%
13	0.72	0.60	0.70	2.26%
14	2.57	0.60	0.70	8.08%
15	2.91	0.60	0.70	9.15%
	<u>31.81</u>			<u>100%</u>

COMPOSITE: C5= 0.59 C100= 0.67

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	750	3.5	3.8	3.29	4	3.13
Pipe Flow	1350	3	10	2.25	12	1.88
Tc Total:				18.18		16.16

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.1 in/hr</u>	<u>5.6 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>58.4 cfs</u>	<u>119.3 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#4
 AREA: 47.64
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#3	31.81	0.59	0.67	66.77%
9	3.61	0.48	0.56	7.58%
10	3.08	0.57	0.67	6.47%
11,17, 18, 19	5.76	0.60	0.70	12.09%
22	3.38	0.65	0.74	7.09%
	<u>47.64</u>			<u>100%</u>

COMPOSITE: C5= 0.59 C100= 0.67

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	750	3.5	3.8	3.29	4	3.13
Pipe Flow	1650	3	10	2.75	12	2.29
Tc Total:				18.68		16.57

Intensity, I (inches/hr) from Fig 5-1

I5

I100

3.0 in/hr

5.6 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

83.7 cfs

178.8 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#5
 AREA: 52.38
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#4	47.64	0.59	0.67	90.95%
16	1.41	0.46	0.56	2.69%
20	1.10	0.60	0.70	2.10%
21	2.23	0.60	0.70	4.26%
	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	52.38			100%

COMPOSITE: C5= 0.59 C100= 0.67

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	750	3.5	3.8	3.29	4	3.13
Pipe Flow	2000	3	10	3.33	12	2.78
Tc Total:				19.27		17.06

Intensity, I (inches/hr) from Fig 5-1

I5 I100
3.0 in/hr 5.5 in/hr

PEAK FLOW: Q-CIA in cfs

Q5 Q100
92.3 cfs 192.7 cfs

HYDROLOGY
RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	DP#6
AREA:	61.89
SOIL TYPE:	A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#5	52.88	0.58	0.66	85.44%
	0.00	0.55	0.63	0.00%
25,26,27A	3.91	0.60	0.70	6.32%
27B	2.46	0.66	0.75	3.97%
28	<u>2.64</u>	0.50	0.63	<u>4.27%</u>
	61.89			100%

COMPOSITE: C5= 0.58 C100= 0.66

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	1000	3.5	3.3	5.05	3.5	4.76
Pipe Flow	2550	3	10	4.25	12	3.54
Tc Total:				21.95		19.46

Intensity, I (inches/hr) from Fig 5-1

I5

I100

2.8 in/hr

5.2 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

100.7 cfs

214.0 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#7
 AREA: 71.86
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#6	61.89	0.58	0.66	86.13%
32,33,34,35,37,38	7.77	0.60	0.70	10.81%
36	2.20	0.35	0.45	3.06%
	0.00	0.00	0.00	0.00%
	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	71.86			100%

COMPOSITE: C5= 0.58 C100= 0.66

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	1000	3.5	3.3	5.05	3.5	4.76
Pipe Flow	3150	3	10	5.25	12	4.38
Tc Total:				22.95		20.29

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>2.7 in/hr</u>	<u>5.0 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>111.6 cfs</u>	<u>236.4 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN:	<u>DP#8</u>
AREA:	<u>19.80</u>
SOIL TYPE:	<u>A & B</u>

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
24	7.14	0.54	0.64	36.06%
30	3.68	0.52	0.60	18.59%
31	4.23	0.51	0.59	21.36%
39	3.31	0.42	0.52	16.72%
23	<u>1.44</u>	0.55	0.63	<u>7.27%</u>
	19.80			100%

COMPOSITE: C5= 0.51 C100= 0.60

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	2.5		17.95		15.56
Pipe Flow	200	2	8	0.42	10	0.33
Tc Total:				18.37		15.89

Intensity, I (inches/hr) from Fig 5-1

I5

3.0 in/hr

I100

5.7 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

30.3 cfs

Q100

67.8 cfs

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#9
 AREA: 20.00
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#8	18.36	0.49	0.59	91.80%
37	1.64	0.41	0.51	8.20%
	0.00	0.00	0.00	0.00%
	0.00	0.00	0.00	0.00%
	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	20.00			100%

COMPOSITE: C5= 0.48 C100= 0.58

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	300	2.5		17.95		15.56
Pipe Flow	600	2	8	1.25	10	1.00
				<u>19.20</u>		<u>16.56</u>

Intensity, I (inches/hr) from Fig 5-1

I5	I100
<u>3.0 in/hr</u>	<u>5.7 in/hr</u>

PEAK FLOW: Q-CIA in cfs

Q5	Q100
<u>29.0 cfs</u>	<u>66.5 cfs</u>

HYDROLOGY

RATIONAL METHODOLOGY

PROJECT: CATHEDRAL RIDGE

BASIN: DP#10
 AREA: 98.25
 SOIL TYPE: A & B

RUNOFF COEFFICIENT, C

ZONE/DEVELOPMENT TYPE	AREA	C5	C100	% AREA
DP#7	71.86	0.58	0.66	73.14%
DP#8	19.80	0.51	0.60	20.15%
DP#9	6.59	0.56	0.66	6.71%
	0.00	0.00	0.00	0.00%
	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00%</u>
	98.25			100%

COMPOSITE: C5= 0.56 C100= 0.65

TIME OF CONCENTRATION: Tc In Minutes:

Travel Type	L	s %	v5 (fps)	Tc (5 year)	v100 (fps)	Tc (100 year)
Overland	100	2		12.65		11.16
Swale	1000	3.5	3.3	5.05	3.5	4.76
Pipe Flow	3500	3	10	5.83	12	4.86
				<u>23.53</u>		<u>20.78</u>
Tc Total:						

Intensity, I (inches/hr) from Fig 5-1

I5

I100

2.7 in/hr

5.0 in/hr

PEAK FLOW: Q-CIA in cfs

Q5

Q100

149.8 cfs

318.3 cfs

Cathedral Ridge MDDP

INLET 1

Q5 = 5.1 Q100 = 10.3
SL = 0.03 SO = 0.02

5 YEAR

100 YEAR

T 10.81
FW 2.13
L1 17.7
L2 10.6
L3 37.9

T 14.07
FW 2.24
L1 24.3
L2 14.6
L3 52.0

Li = 12.00

5 YR Q = 5.1 100 YR Q 10.3
5 YR Qi = 3.2 100 YR Qi 5.1
5 YR Qfb = 1.9 100 YR Qfb 5.2

Cathedral Ridge MDDP

INLET 2

Q5 =	2.8	Q100 =	5.8
SL =	0.03	SO =	0.02

5 YEAR

T	8.63
FW	2.03
L1	13.5
L2	8.1
L3	28.9

100 YEAR

T	11.34
FW	2.15
L1	18.8
L2	11.3
L3	40.2

Li = 10.00

5 YR Q =	2.8	100 YR Q	5.8
5 YR Qi =	<u>1.8</u>	100 YR Qi	<u>3.1</u>
5 YR Qfb =	1.0	100 YR Qfb	2.7

Cathedral Rdige MDDP

INLET 3

Q5 = 1.1 Q100 = 2.0
SL = 0.03 SO = 0.02

5 YEAR

100 YEAR

T 6.08
FW 1.87
L1 8.8
L2 5.3
L3 18.8

T 7.61
FW 1.97
L1 11.6
L2 6.9
L3 24.8

Li = 6.00

5 YR Q = 1.1 100 YR Q 2

5 YR Qi = 0.7 100 YR Qi 1.0

5 YR Qfb = 0.4 100 YR Qfb 1.0

Cathedral Ridge MDDP

Sump Inlet BASIN 4

	5 YEAR	100 YEAR		
APPROACH FLOWS (worse case)	6.2	13.6	s(x)=	0.02
d =	0.39	0.52	s(l)=	0.002
			n=	0.016
TOTAL FLOWS	6.2	13.6	L=	10
d(max)=	0.17	0.43		

Cathedral Ridge MDDP

INLET 5

Q5 = 1.4
SL = 0.02

Q100 = 2.8
SO = 0.02

5 YEAR

T 7.18
FW 1.59
L1 8.8
L2 5.3
L3 18.8

100 YEAR

T 9.31
FW 1.68
L1 12.1
L2 7.3
L3 25.9

Li = 6.00

5 YR Q = 1.4

100 YR Q 2.8

5 YR Qi = 0.9

100 YR Qi 1.4

5 YR Qfb = 0.5

100 YR Qfb 1.4

Cathedral Ridge MDDP

INLET 9

Q5 = 4.5 Q100 = 9.7
SL = 0.013 SO = 0.02

5 YEAR

T 12.06
FW 1.43
L1 13.3
L2 8.0
L3 28.5

100 YEAR

T 16.09
FW 1.51
L1 18.8
L2 11.3
L3 40.2

Li = 10.00

5 YR Q = 4.5 100 YR Q 9.7
5 YR Qi = 3.0 100 YR Qi 5.2
5 YR Qfb = 1.5 100 YR Qfb 4.5

Cathedral Ridge MDDP

INLET Basin 10

Q5 =	7.0	Q100 =	14.6
SL =	0.04	SO =	0.02

5 YEAR

100 YEAR

T	11.53
FW	2.49
L1	22.1
L2	13.3
L3	47.3

T	15.19
FW	2.63
L1	30.7
L2	18.5
L3	65.8

Li = 15.00

5 YR Q =	7	100 YR Q	14.6
5 YR Qi =	<u>4.4</u>	100 YR Qi	<u>7.1</u>
5 YR Qfb =	2.6	100 YR Qfb	7.5

Cathedral Ridge MDDP

INLET Basin 11

Q5 = 6.8
SL = 0.04

Q100 = 14.5
SO = 0.02

5 YEAR

T 11.41
FW 2.48
L1 21.8
L2 13.1
L3 46.7

100 YEAR

T 15.15
FW 2.63
L1 30.6
L2 18.4
L3 65.6

Li = 15.00

5 YR Q = 6.8

5 YR Qi = 4.3

5 YR Qfb = 2.5

100 YR Q 14.5

100 YR Qi 7.1

100 YR Qfb 7.4

Cathedral Ridge MDDP

INLET Basin 14

Q5 =	6.2	Q100 =	12.8
SL =	0.02	SO =	0.02

5 YEAR

T	12.55
FW	1.79
L1	17.3
L2	10.4
L3	37.0

100 YEAR

T	16.47
FW	1.89
L1	23.9
L2	14.4
L3	51.3

Li = 20.00

5 YR Q =	6.2	100 YR Q	12.8
5 YR Qi =	<u>4.8</u>	100 YR Qi	<u>8.8</u>
5 YR Qfb =	1.4	100 YR Qfb	4.0

Cathedral Ridge MDDP

INLET Basin 12, 13 & 14

Q5 = 7.2
SL = 0.02

Q100 = 16.3
SO = 0.02

5 YEAR

T 13.27
FW 1.81
L1 18.5
L2 11.1
L3 39.6

100 YEAR

T 18.03
FW 1.92
L1 26.6
L2 16.0
L3 57.1

Li = 10.00

5 YR Q = 7.2

5 YR Qi = 3.9

5 YR Qfb = 3.3

100 YR Q 16.3

100 YR Qi 6.1

100 YR Qfb 10.2

Cathedral Ridge MDDP

Sump Inlet BASIN 16

5 YEAR

100 YEAR

APPROACH FLOWS
(worse case)

2.4

5.4

s(x)=

0.02

d =

0.27

0.37

s(l)=

0.002

n=

0.016

TOTAL FLOWS

2.4

5.4

L=

4

d(max)=

0.05

0.25

Cathedral Ridge MDDP

INLET Basin 17

Q5 = 5.8 Q100 = 13.9
SL = 0.02 SO = 0.02

5 YEAR

T 12.24
FW 1.78
L1 16.8
L2 10.1
L3 36.0

100 YEAR

T 16.98
FW 1.90
L1 24.8
L2 14.9
L3 53.2

Li = 10.00

5 YR Q =	5.8	100 YR Q	13.9
5 YR Qi =	<u>3.5</u>	100 YR Qi	<u>5.6</u>
5 YR Qfb =	2.3	100 YR Qfb	8.3

Cathedral Ridge MDDP

Sump Inlet BASIN 18 & 19

5 YEAR

100 YEAR

APPROACH FLOWS
(worse case)

9.3
d = 0.45

25.4

0.66

s(x)= 0.02

s(l)= 0.002

n= 0.016

TOTAL FLOWS

15

40.8

L= 10

d(max)= 0.47

1.04

Cathedral Ridge MDDP

INLET Basin 20

Q5 = 3.3
SL = 0.025

Q100 = 6.9
SO = 0.02

5 YEAR

T 9.50
FW 1.89
L1 13.8
L2 8.3
L3 29.6

100 YEAR

T 12.53
FW 2.00
L1 19.3
L2 11.6
L3 41.3

Li = 10.00

5 YR Q =	3.3	100 YR Q	6.9
5 YR Qi =	<u>2.1</u>	100 YR Qi	<u>3.6</u>
5 YR Qfb =	1.2	100 YR Qfb	3.3

Cathedral Ridge MDDP

INLET Basin 21

Q5 = 7.5
SL = 0.025

Q100 = 19.9
SO = 0.02

5 YEAR

T 12.92
FW 2.01
L1 20.0
L2 12.0
L3 42.9

100 YEAR

T 18.64
FW 2.16
L1 31.0
L2 18.6
L3 66.4

Li = 10.00

5 YR Q = 7.5

5 YR Qi = 3.7

5 YR Qfb = 3.8

100 YR Q 19.9

100 YR Qi 6.4

100 YR Qfb 13.5

Cathedral Ridge MDDP

INLET Basin 22-1

Q5 =	7.9	Q100 =	16.3
SL =	0.02	SO =	0.02

5 YEAR

100 YEAR

T	13.74
FW	1.82
L1	19.3
L2	11.6
L3	41.3

T	18.03
FW	1.92
L1	26.6
L2	16.0
L3	57.1

Li = 8.00

5 YR Q =	7.9	100 YR Q	16.3
5 YR Qi =	<u>3.3</u>	100 YR Qi	<u>4.9</u>
5 YR Qfb =	4.6	100 YR Qfb	11.4

Cathedral Ridge MDDP

INLET Basin 22-2

Q5 = 4.6
SL = 0.02

Q100 = 11.4
SO = 0.02

5 YEAR

T 11.22
FW 1.75
L1 15.1
L2 9.1
L3 32.4

100 YEAR

T 15.77
FW 1.87
L1 22.7
L2 13.6
L3 48.7

Li = 8.00

5 YR Q = 4.6

5 YR Qi = 2.4

5 YR Qfb = 2.2

100 YR Q 11.4

100 YR Qi 4.0

100 YR Qfb 7.4

Cathedral Ridge MDDP

Sump Inlet BASIN 24

5 YEAR

100 YEAR

APPROACH FLOWS
(worse case)

17.8

37.8

s(x)= 0.02

d = 0.57

0.76

s(l)= 0.002

TOTAL FLOWS

17.8

37.8

n= 0.016

d(max)= 0.49

0.91

L= 12

Cathedral Ridge MDDP

INLET Basin 26

Q5 = 3.1
SL = 0.03

Q100 = 6.8
SO = 0.02

5 YEAR

100 YEAR

T 8.97
FW 2.05
L1 14.1
L2 8.5
L3 30.3

T 12.04
FW 2.17
L1 20.2
L2 12.1
L3 43.2

Li = 15.00

5 YR Q = 3.1

100 YR Q 6.8

5 YR Qi = 2.3

100 YR Qi 4.5

5 YR Qfb = 0.8

100 YR Qfb 2.3

Cathedral Ridge MDDP

INLET Basin 25

Q5 = 9.2
SL = 0.025

Q100 = 20.4
SO = 0.02

5 YEAR

T 13.95
FW 2.04
L1 21.9
L2 13.2
L3 47.0

100 YEAR

T 18.81
FW 2.16
L1 31.3
L2 18.8
L3 67.1

Li = 15.00

5 YR Q = 9.2

5 YR Qi = 5.8

5 YR Qfb = 3.4

100 YR Q 20.4

100 YR Qi 9.8

100 YR Qfb 10.6

Cathedral Ridge MDDP

Sump Inlet BASIN 27

5 YEAR

100 YEAR

APPROACH FLOWS
(worse case)

5.5

12.7

s(x)= 0.02

d =

0.37

0.51

s(l)= 0.002

n= 0.016

TOTAL FLOWS

8.9

23.3

L= 8

d(max)=

0.31

0.75

Cathedral Ridge MDDP

Sump Inlet BASIN 28

5 YEAR

100 YEAR

APPROACH FLOWS
(worse case)

15.5

39.1

s(x)= 0.02

d =

0.54

0.77

s(l)= 0.002

n= 0.016

TOTAL FLOWS

15.5

39.1

L= 12

d(max)=

0.43

0.93

Cathedral Ridge MDDP

INLET Basin 32

Q5 = 6.2
SL = 0.03

Q100 = 13.0
SO = 0.02

5 YEAR

T 11.63
FW 2.16
L1 19.3
L2 11.6
L3 41.4

100 YEAR

T 15.35
FW 2.28
L1 26.9
L2 16.2
L3 57.7

Li = 15.00

5 YR Q = 6.2

5 YR Qi = 4.1

5 YR Qfb = 2.1

100 YR Q 13

100 YR Qi 7.2

100 YR Qfb 5.8

Cathedral Ridge MDDP

Sump Inlet BASIN 34

	5 YEAR	100 YEAR		
APPROACH FLOWS (worse case)	4.7	11.4	s(x)=	0.02
d =	0.35	0.49	s(l)=	0.002
			n=	0.016
TOTAL FLOWS	9	20.6	L=	4
d(max)=	0.44	0.87		

Cathedral Ridge MDDP

Sump Inlet BASIN 40

	5 YEAR	100 YEAR		
APPROACH FLOWS	5.7	12.4	s(x)=	0.02
(worse case)			s(l)=	0.002
d =	0.37	0.50	n=	0.016
TOTAL FLOWS	5.7	12.4	L=	4
d(max)=	0.27	0.58		

Cathedral Ridge MDDP

Sump Inlet BASIN 41

5 YEAR

100 YEAR

APPROACH FLOWS
(worse case)

7.4

17.9

s(x)= 0.02

d = 0.41

0.58

s(l)= 0.002

TOTAL FLOWS

7.4

17.9

n= 0.016

d(max)= 0.30

0.69

L= 6

Cathedral Ridge MDDP

Sump Inlet BASIN 42

5 YEAR

100 YEAR

APPROACH FLOWS
(worse case)

2.1

6.1

s(x)=

0.02

d =

0.26

0.38

s(l)=

0.002

n=

0.016

TOTAL FLOWS

2.1

6.1

L=

4

d(max)=

0.02

0.29

Cathedral Ridge MDDP

Sump Inlet BASIN 43

	5 YEAR	100 YEAR		
APPROACH FLOWS	2.2	4.7	s(x)=	0.02
(worse case)			s(l)=	0.002
d =	0.26	0.35	n=	0.016
TOTAL FLOWS	2.2	4.7	L=	4
d(max)=	0.03	0.21		