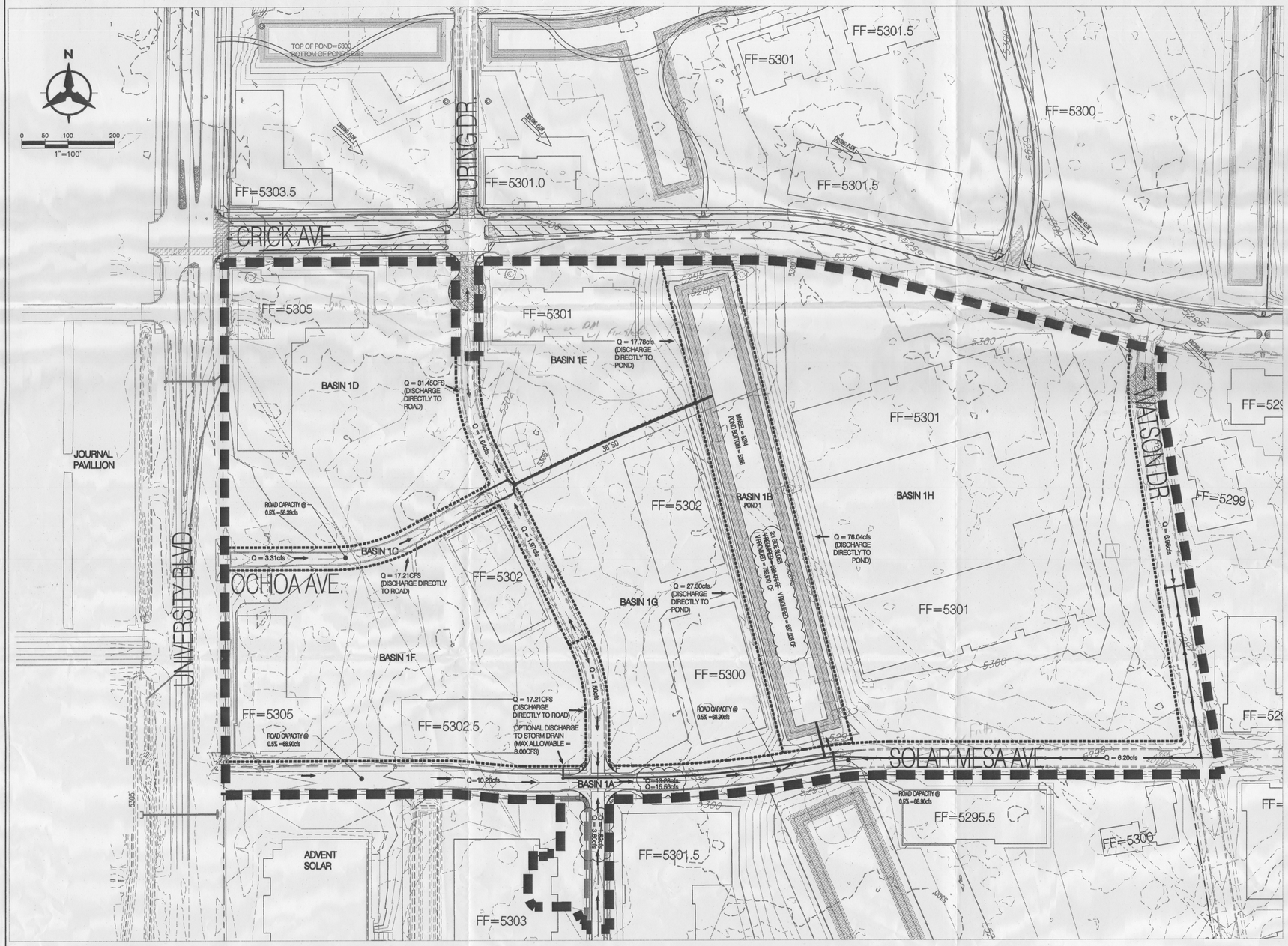
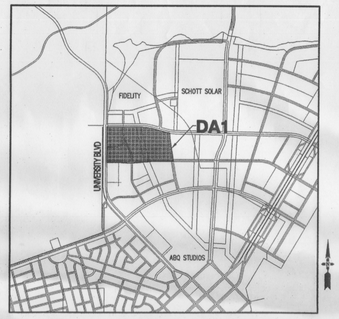




LOCATION MAP
ZONE ATLAS INDEX MAP R-16

Mesa del Sol

Bohannan ▲ Huston Inc.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

ENGINEER
MICHAEL BALASKOVITS
NEW MEXICO
18187
10-27-09
LICENSED PROFESSIONAL ENGINEER

PROJECT

Mesa Del Sol
Innovation Park - Drainage Area One
Albuquerque, New Mexico

DRAINAGE MANAGEMENT PLAN

Introduction/Purpose
This submittal describes the drainage scheme for Drainage Area One (DA1) within the Mesa del Sol Innovation Park. This drainage management plan will serve as guidelines for ultimate pond sizing and drainage calculations for the block. This plan will provide a framework diagram for future hydrology submittals including but not limited to sites and work order approvals.

Existing Conditions
The block at the north end of the Innovation Park (referred to here after as DA1) within Mesa del Sol is currently undeveloped and slopes 0.5% to 1.0% from the west to east. The final outfall for this current drainage is a series of playas that extend down the middle of the proposed Innovation Park to the south. The block being analyzed will be bound by University Boulevard to the west, Crick Avenue to the north, Watson Drive to the east, and Solar Mesa Avenue to the south.

Offsite Drainage
Offsite drainage from the west of the site has been addressed as part of the University Boulevard Construction Project (COA Hydro # R16/D3). Drainage from the north has been mitigated as part of the approved Drainage Area Zero Drainage Management Plan (COA Hydro #R16/DA0). Any drainage from the east and south of the block will be mitigated and rerouted around the block toward the aforementioned current playa system. All drainage generated onsite will be retained under the 100yr 10day storm event and not effect surrounding areas.

Proposed Site Grading
The slope of the DA1 basin under proposed conditions is similar to existing conditions. The block will have a centrally located, permanent, retention pond within an open space/drainage tract. The pond is designed to retain the 100 year, 10 day storm generated by the site.

Drainage generated by the roads within the Block 1 basin will be will be conveyed to the regional retention pond via surface flow and storm drainage. Each site will be analyzed on a site by site basis. The drainage for sites furthest from the pond will be conveyed to the pond by either direct storm drain or surface flow within the streets where allowable. The flow generated by each sub-basin is shown within the table labeled MESA DEL SOL DRAINAGE AREA 1 – DEVELOPED HYDRAULIC CALCULATIONS. In addition the capacity of each road based on Manning's equation is shown on the overall drainage map.

The regional retention ponds will be subject to future site planning considerations which will incorporate water quality facilities, along with aesthetically pleasing features such as a trail system, pedestrian amenities, and sedimentation basin facilities. In addition, infiltration basins will be installed in the retention ponds to manage nuisance flows and provide a positive discharge of ponded water over time; however, the infiltration does not reduce the 100 year, 10 day stored ponding volume requirements.

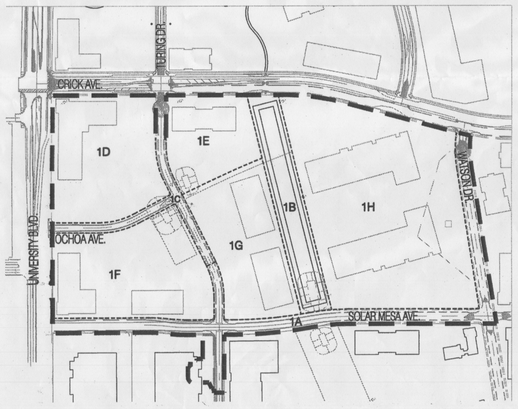
The ponds are sized in accordance with the methodology outlined in the DPM section 22.2. Developed land treatments for the majority of this block were assumed to be 90% treatment D and 10% treatment B (See MESA DEL SOL DRAINAGE AREA 1 – DEVELOPED HYDRAULIC CALCULATIONS for basin calculations and land treatments). The volume of retention required (Vr) is 637,028 CF and the volume of retention provided (Vp) is 759,610 CF.

Floodplain

In accordance with FEMA Community Map Panel #35001C0555 E, the site is not located within a floodplain.

Conclusion

This drainage submittal has been prepared in accordance with City of Albuquerque requirements. This plan demonstrates the proposed grading and drainage concepts. The implementation of these concepts would result in the safe retention of the 100 yr, 10 day storm event. Individual sites will be subject to separate hydrology approval in conjunction with the guidelines set forth in this drainage management plan. This drainage management plan is submitted in support of future development within the block, including building sites and road infrastructure.



BASIN MAP

MESA DEL SOL DRAINAGE AREA 1 - DEVELOPED HYDRAULIC CALCULATIONS
Ultimate Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2

BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{10day}$
ID	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(cfs)	(inches)	(CF)	(CF)
Basin 1A (Surrounding Roads)	266227	6.11	0.0%	0.0%	0.0%	100.0%	4.70	28.73	2.12	47033	82530
Basin 1A1	95063	2.18	0.0%	0.0%	0.0%	100.0%	4.70	10.26	2.12	16794	29470
~~Basin 1A2~~	~~13914~~	~~0.32~~	~~0.0%~~	~~0.0%~~	~~0.0%~~	~~100.0%~~	~~4.70~~	~~1.50~~	~~2.12~~	~~2458~~	~~4313~~
Basin 1A3	35223	0.81	0.0%	0.0%	0.0%	100.0%	4.70	3.80	2.12	6223	10919
Basin 1A4	57503	1.32	0.0%	0.0%	0.0%	100.0%	4.70	6.20	2.12	10159	17826
Basin 1A5	64524	1.48	0.0%	0.0%	0.0%	100.0%	4.70	6.96	2.12	11399	20002
Total								28.73			
Basin 1B (Open Space/Regional Retention Pond)	162944	3.74	0.0%	50.0%	50.0%	0.0%	2.71	10.14	0.96	12968	12968
Basin 1C (Interior Roads)	64193	1.47	0.0%	0.0%	0.0%	100.0%	4.70	6.93	2.12	11341	19900
Basin 1C1	30680	0.70	0.0%	0.0%	0.0%	100.0%	4.70	3.31	2.12	5420	9511
Basin 1C2	15244	0.35	0.0%	0.0%	0.0%	100.0%	4.70	1.64	2.12	2693	4726
Basin 1C3	18268	0.42	0.0%	0.0%	0.0%	100.0%	4.70	1.97	2.12	3227	5663
Total								6.93			
Basin 1D	307303	7.05	0.0%	10.0%	0.0%	90.0%	4.46	31.45	1.99	50859	87735
Basin 1E	173716	3.99	0.0%	10.0%	0.0%	90.0%	4.46	17.78	1.99	28750	49596
Basin 1F	336363	7.72	0.0%	10.0%	0.0%	90.0%	4.46	34.42	1.99	55668	96032
Basin 1G	266740	6.12	0.0%	10.0%	0.0%	90.0%	4.46	27.30	1.99	44145	76154
Basin 1H (Bldg 2&3)	742954	17.06	0.0%	10.0%	0.0%	90.0%	4.46	76.04	1.99	122959	212113
Total								232.77		373722.97	637028.15

REGIONAL RETENTION POND CALCULATIONS

Pond 1	
Top Area:	121957 SF
Bottom Area:	70302 SF
Depth:	8 FT
Volume*:	759,608 CF
Total Volume	
Provided (Vp)=	***759,610 CF***
Volume Required (Vr)=	~~***630,475 CF***~~

637,028 CF

*Conic Method - V=h/3(A1 +A2+sqrt(A1*A2))

LEGEND

- BASIN LINE
- SUB-BASIN LINE
- BASIN 1J — SUB-BASIN ID
- DEVELOPED FLOW ARROW
- EXISTING FLOW — EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

NOTE:
A CROSS-LOT DRAINAGE EASEMENT FOR ALL THE TRACTS WITHIN THIS BLOCK SHALL BE GRANTED WITH THE REQUIRED PLAT

NOTE: FINISHED FLOORS AND PROPOSED SHOWN ARE CONCEPTUAL.

RECEIVED
OCT 29 2009
HYDROLOGY SECTION

REVISIONS

DRAWN BY	
REVIEWED BY	
DATE	MAY 2009
PROJECT NO.	
DRAWING NAME	DRAINAGE MANAGEMENT PLAN
SHEET NO.	C001
OF	

P:\Mesa Del Sol\Proposed\Grading\Employment_Center\Drainage\DrainageArea1.dwg
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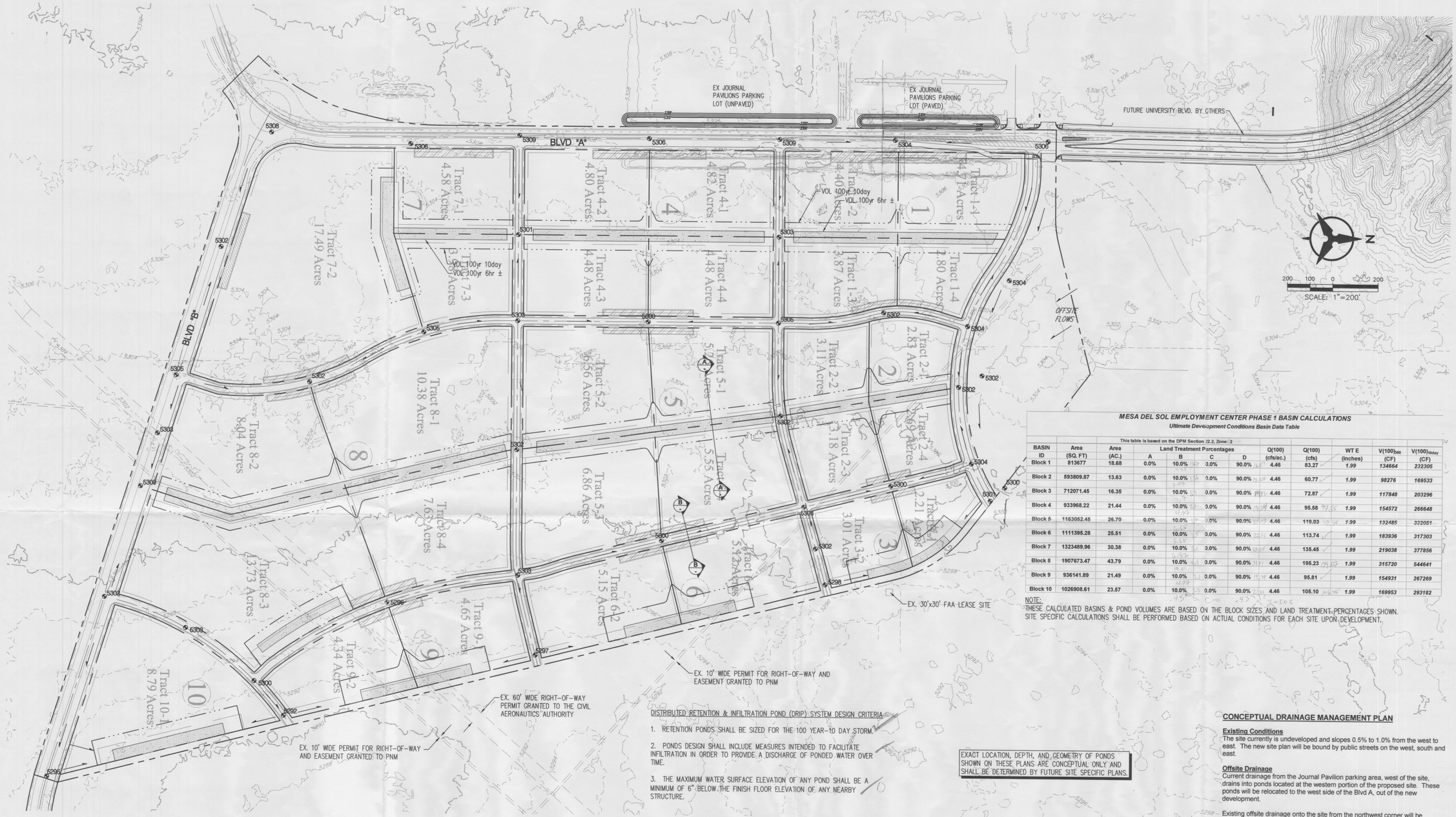


MESA DEL SOL EMPLOYMENT CENTER PHASE 1 BASIN CALCULATIONS

Ultimate Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2

BASIN ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (cfs)	WT E (inches)	$V(100)_{24H}$ (CF)	$V(100)_{10day}$ (CF)
Block 1	813677	18.68	0.0%	10.0%	0.0%	90.0%	4.46	83.27	1.99	134664	232305
Block 2	593809.87	13.63	0.0%	10.0%	0.0%	90.0%	4.46	60.77	1.99	98276	169533
Block 3	712071.45	16.35	0.0%	10.0%	0.0%	90.0%	4.46	72.87	1.99	117848	203296
Block 4	933968.22	21.44	0.0%	10.0%	0.0%	90.0%	4.46	95.58	1.99	154572	266648
Block 5	1163052.45	26.70	0.0%	10.0%	0.0%	90.0%	4.46	119.03	1.99	192485	332051
Block 6	1111395.28	25.51	0.0%	10.0%	0.0%	90.0%	4.46	113.74	1.99	183936	317303
Block 7	1323489.96	30.38	0.0%	10.0%	0.0%	90.0%	4.46	135.45	1.99	219038	377856
Block 8	1907673.47	43.79	0.0%	10.0%	0.0%	90.0%	4.46	195.23	1.99	315720	544641
Block 9	936141.89	21.49	0.0%	10.0%	0.0%	90.0%	4.46	95.81	1.99	154931	267269
Block 10	1026908.61	23.57	0.0%	10.0%	0.0%	90.0%	4.46	105.10	1.99	169953	293182

NOTE:
THESE CALCULATED BASINS & POND VOLUMES ARE BASED ON THE BLOCK SIZES AND LAND TREATMENT PERCENTAGES SHOWN. SITE SPECIFIC CALCULATIONS SHALL BE PERFORMED BASED ON ACTUAL CONDITIONS FOR EACH SITE UPON DEVELOPMENT.

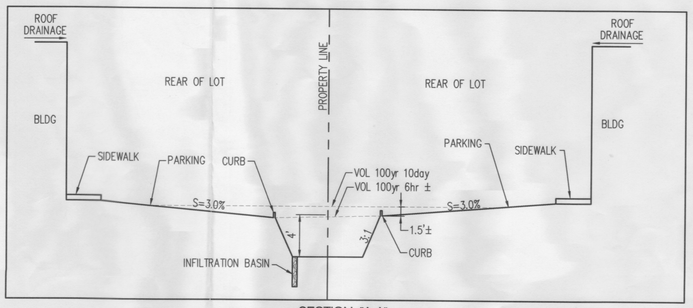
DISTRIBUTED RETENTION & INFILTRATION POND (DRIP) SYSTEM DESIGN CRITERIA

1. RETENTION PONDS SHALL BE SIZED FOR THE 100 YEAR-10 DAY STORM.
2. PONDS DESIGN SHALL INCLUDE MEASURES INTENDED TO FACILITATE INFILTRATION IN ORDER TO PROVIDE A DISCHARGE OF PONDED WATER OVER TIME.
3. THE MAXIMUM WATER SURFACE ELEVATION OF ANY POND SHALL BE A MINIMUM OF 6" BELOW THE FINISH FLOOR ELEVATION OF ANY NEARBY STRUCTURE.

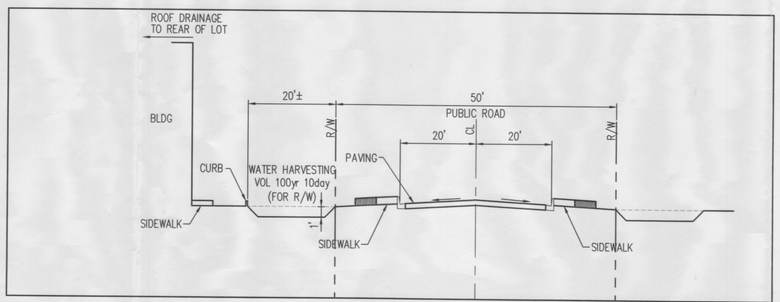
EXACT LOCATION, DEPTH, AND GEOMETRY OF PONDS SHOWN ON THESE PLANS ARE CONCEPTUAL ONLY AND SHALL BE DETERMINED BY FUTURE SITE SPECIFIC PLANS.

LEGEND

- 4' DEEP POND 3:1 SIDE SLOPE FOR 100yr 6-HR STORM ±
- HIGH WATER LINE ON PAVEMENT OF 100yr 10 DAY STORM
- WATER HARVESTING OF 100yr 10 DAY STORM FROM PUBLIC R/W



SECTION "A-A"



SECTION "B-B"

CONCEPTUAL DRAINAGE MANAGEMENT PLAN

Existing Conditions
The site currently is undeveloped and slopes 0.5% to 1.0% from the west to east. The new site plan will be bound by public streets on the west, south and east.

Offsite Drainage
Current drainage from the Journal Pavilion parking area, west of the site, drains into ponds located at the western portion of the proposed site. These ponds will be relocated to the west side of the Blvd A, out of the new development.

Existing offsite drainage onto the site from the northwest corner will be diverted east around the site through a swale. This small historic flow will outfall to existing grade at the far northeast corner of the site and will drain to the southeast in historic fashion.

Proposed Site Grading
The slope of the site under proposed conditions is similar to existing conditions. Additional water harvesting areas and retention ponds will be added onsite to accept all flows generated throughout the development. In addition infiltration basins will be installed in the retention ponds to manage nuisance flows and provide a positive discharge of ponded water over time. However, the infiltration does not reduce the 100 year, 10 day stored ponding volume requirements.

In addition, each tract will have a retention pond(s) sized to accept the 100 year, 10 day storm generated by the site. (See pond and water harvesting area typical sections, Section "A-A" and Section "B-B" this sheet.) The water harvesting areas and ponds were sized in accordance with the methodology outlined in the DPM section 22.2. Developed land treatments for these sites were assumed to be 90% treatment D and 10% treatment B.

Bohannan ▲ Huston Inc.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

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October 13, 2005 - 4:00pm

architecture
interiors
planning
engineering

Dekker
Perich
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ARCHITECT

ENGINEER

BRUCE J. STIDWORTHY NEW MEXICO 14523 REGISTERED PROFESSIONAL ENGINEER
10/13/05

PROJECT

MESA DEL SOL
Employment Center - Phase One
Albuquerque, New Mexico
City Project #1004097

REVISIONS
1 4-26-05 EPC SUBMITTAL REVISIONS EPC #05EPC00516/00579
2 5-4-05 EPC SUBMITTAL REVISIONS
3 10-10-05 DRB SUBMITTAL

DRAWN BY	RWB
REVIEWED BY	JLM
DATE	OCTOBER 10, 2005
PROJECT NO.	03069

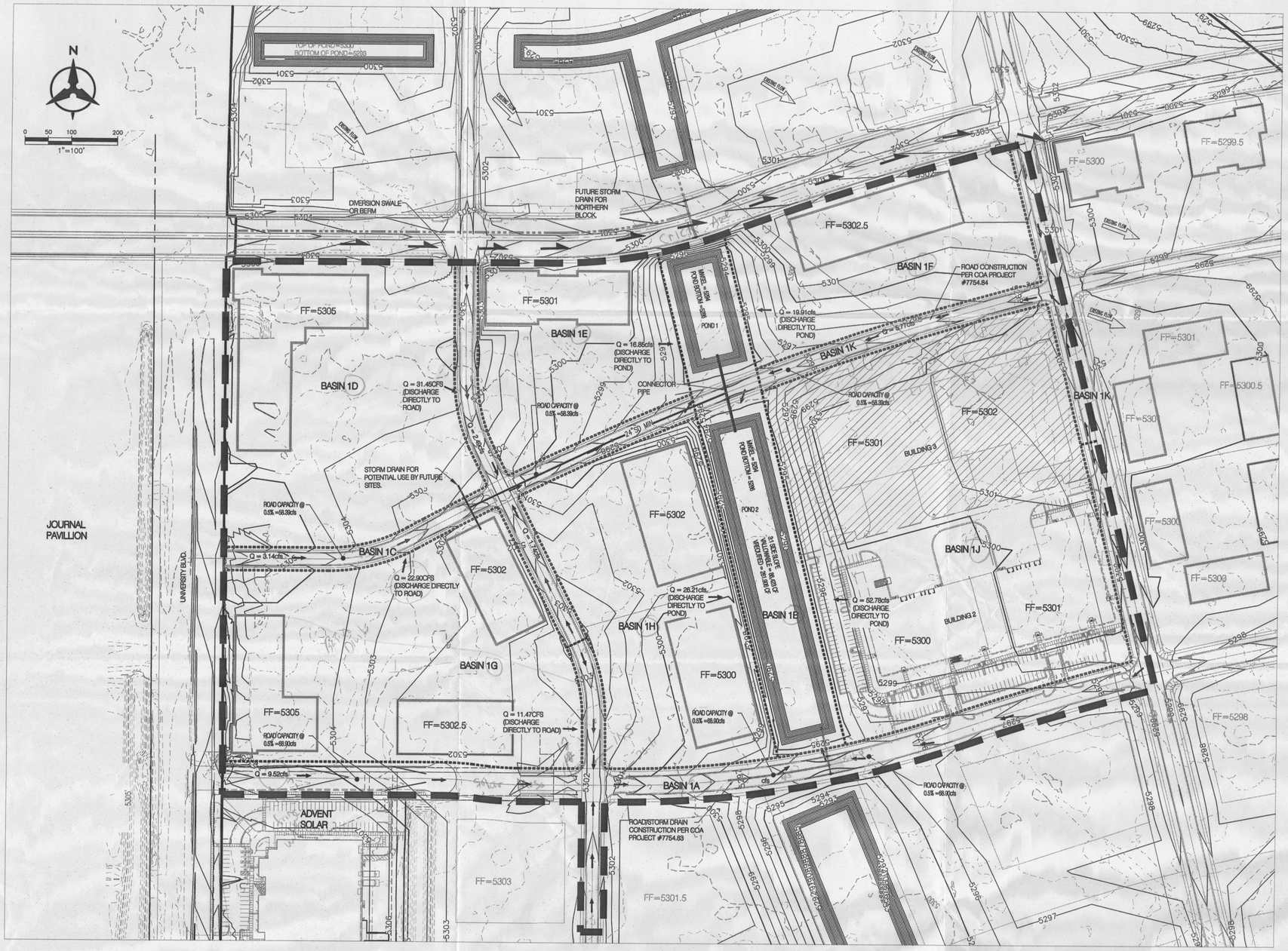
DRAWING NAME

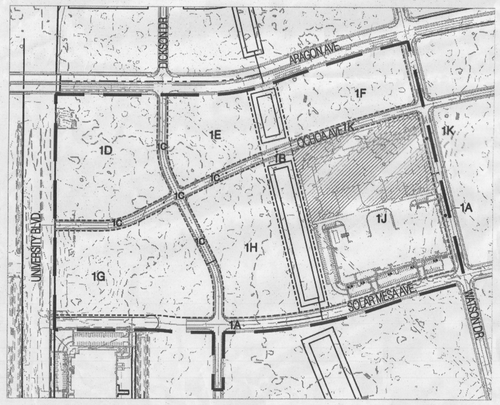
CONCEPTUAL GRADING & DRAINAGE PLAN
(Not For Construction)

SHEET NO.

RECEIVED
OCT 17 2005
HYDROLOGY SECTION

9 OF 12





BASIN MAP

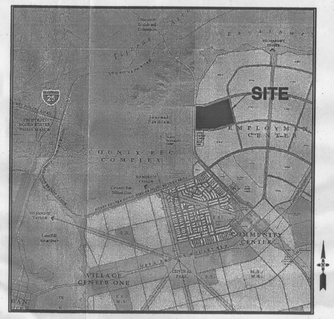
MESA DEL SOL BLOCK 1 - DEVELOPED HYDRAULIC CALCULATIONS

Ultimate Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2

BASIN ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (cfs)	WT E (inches)	$V(100)_{360}$ (CF)	$V(100)_{10day}$ (CF)
Basin 1A (Surrounding Roads)	193248	4.44	0.0%	10.0%	0.0%	90.0%	4.46	19.78	*1.99*	*31982*	*55172*
Basin 1B (Open Space/Regional Retention Ponds)	169503	3.89	0.0%	50.0%	50.0%	0.0%	2.71	10.55	*0.96*	*13490*	*13490*
Basin 1C (Interior Roads)	96013	2.20	0.0%	10.0%	0.0%	90.0%	4.46	9.83	*1.99*	*15890*	*27412*
Basin 1D	307303	7.05	0.0%	10.0%	0.0%	90.0%	4.46	31.45	*1.99*	*50859*	*87735*
Basin 1E	164688	3.78	0.0%	10.0%	0.0%	90.0%	4.46	16.85	*1.99*	*27256*	*47019*
Basin 1F	194538	4.47	0.0%	10.0%	0.0%	90.0%	4.46	19.91	*1.99*	*32196*	*55541*
Basin 1G	336364	7.72	0.0%	10.0%	0.0%	90.0%	4.46	34.42	*1.99*	*55668*	*96032*
Basin 1H	256057	5.88	0.0%	10.0%	0.0%	90.0%	4.46	26.21	*1.99*	*42377*	*73104*
Basin 1J (Bldg 2&3)	515711	11.84	0.0%	10.0%	0.0%	90.0%	4.46	52.78	*1.99*	*85350*	*147236*
Basin 1K (Surrounding Roads)	56364	1.29	0.0%	10.0%	0.0%	90.0%	4.46	5.77	*1.99*	*9328*	*16092*
Total	*2289789.65*	*52.57*	*0.0%*	*7.9%*	*3.7%*	*37.6%*				*364397.05*	*618831.45*

REGIONAL RETENTION POND CALCULATIONS		
Pond 1		
Top Area:	30000	SF
Bottom Area:	14544	SF
Depth:	8	FT
Volume*:	174,486	CF
Pond 2		
Top Area:	85200	SF
Bottom Area:	47664	SF
Depth:	8	FT
Volume*:	524,239	CF
Total Volume		
Provided (Vp)=	***698,725***	***CF***
Volume Required (Vr)=	***618,831***	***CF***
*Conic Method - V=h/3(A1 +A2+sqrt(A1*A2))		



LOCATION MAP

ZONE ATLAS INDEX MAP R-16

BLOCK 1 DRAINAGE MANAGEMENT PLAN

Introduction/Purpose

This submittal describes the drainage scheme for Block 1 within the Mesa del Sol Employment Center. This drainage management plan will serve as guidelines for ultimate pond sizing and drainage calculations for the block. Specifically this DMP is submitted in support of COA hydrology approval for Building 2 building permit approval, as well as project # 7754.83 and 7754.84 COA work order approval. In addition this plan will also provide a framework diagram for future submittals including but not limited to sites and work order approvals.

Existing Conditions

The block at the north end of the Employment Center (referred to here after as Block 1) within Mesa del Sol is currently undeveloped and slopes 0.5% to 1.0% from the west to east. The final outfall for this current drainage is a series of playas that extend down the middle of the proposed Employment Center to the south. The block being analyzed will be bound by University Blvd. to the west, Crick Avenue to the north, Watson Drive to the east and Solar Mesa Avenue to the south.

Offsite Drainage

Current drainage from the Journal Pavilion parking area, west of the site, drains into ponds located at the western portion of the proposed site. These ponds will be relocated to the west side of the road, out of the new development. Currently, a storm drain system, draining north in University to the Tijeras is being installed to allow the County Recreation Complex to manage all storm drainage generated on their site. Drainage from the north and south of the block will be mitigated and rerouted around the block to the east toward the current playa system. All drainage generated onsite will be retained under the 100yr 10day storm event and not effect surrounding areas.

Proposed Site Grading

The slope of the Block 1 basin under proposed conditions is similar to existing conditions. The block will have two centrally located, permanent, retention ponds within open space/drainage tracts. These ponds are designed to retain the 100 year, 10 day storm generated by the site.

Drainage generated by the roads within the Block 1 basin will be will be conveyed to the regional retention pond via surface flow and storm drainage. Each site will be analyzed on a site by site basis. The drainage for sites furthest from the pond will be conveyed to the pond by either direct storm drain or surface flow within the streets. The flow generated by each sub-basin is shown within the table labeled MESA DEL SOL BLOCK 1 – DEVELOPED HYDRAULIC CALCULATIONS. In addition the capacity of each road based on Manning's equation is shown on the overall drainage map.

The regional retention ponds will be subject to future site planning considerations which will incorporate water quality facilities, along with aesthetically pleasing features such as a trail system and pedestrian amenities. In addition, infiltration basins will be installed in the retention ponds to manage nuisance flows and provide a positive discharge of ponded water over time; however, the infiltration does not reduce the 100 year, 10 day stored ponding volume requirements.

The ponds are sized in accordance with the methodology outlined in the DPM section 22.2. Developed land treatments for the majority of this block were assumed to be 90% treatment D and 10% treatment B (See MESA DEL SOL BLOCK 1 – DEVELOPED HYDRAULIC CALCULATIONS for basin calculations and land treatments). For block 1, the volume of retention required (Vr) is 618,831 CF and the volume of retention provided (Vp) is 698,725 CF.

Floodplain

In accordance with FEMA Community Map Panel #35001C0555 E, the site is not located within a floodplain.

Conclusion

This drainage submittal has been prepared in accordance with City of Albuquerque requirements. This plan demonstrates the proposed grading and drainage concepts. The implementation of these concepts would result in the safe retention of the 100 yr, 10 day storm event. Individual sites will be subject to separate hydrology approval in conjunction with the guidelines set forth in this drainage management plan. This drainage management plan is submitted is support of future development within the block, including building sites and roads. With this submittal we request Hydrology Department approval for Building Permit (Building 2), work order approval (7754.83, & 7754.84).

LEGEND

- BASIN LINE
- SUB–BASIN LINE
- BASIN 1J — SUB–BASIN ID
- DEVELOPED FLOW ARROW
- EXISTING FLOW — EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

NOTE:
FINISHED FLOORS AND PROPOSED GRADING SHOWN ARE CONCEPTUAL.

architecture
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ARCHITECT

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JEFFREY L. MUIRBURN
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10858
REGISTERED PROFESSIONAL ENGINEER
1-31-07

PROJECT

Mesa Del Sol
Employment Center - Block 1
Albuquerque, New Mexico

REVISIONS

DRAWN BY
REVIEWED BY
DATE 1.29.07
PROJECT NO.
DRAWING NAME
BLOCK 1 DRAINAGE MANAGEMENT PLAN
SHEET NO.
C001
OF

RECEIVED
FEB 01 2007
HYDROLOGY SECTION

Bohannan ▲ Huston Inc.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

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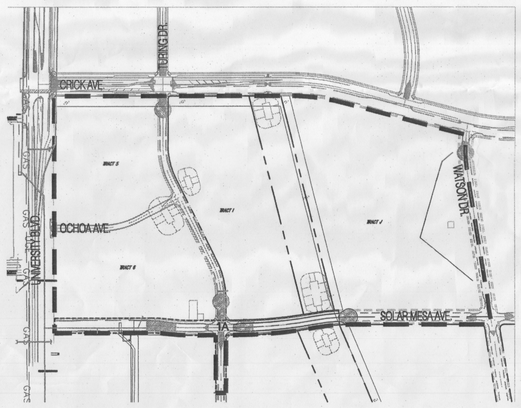
January 31, 2007 – 6:08pm



BASIN MAP

MESA DEL SOL DRAINAGE AREA 1 - COA Prjt # 775478 DEVELOPED HYDRAULIC CALCULATIONS

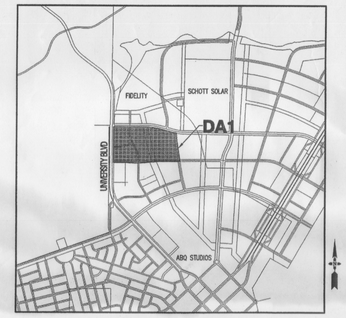
Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2

BASIN ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (cfs)	WT E (inches)	$V(100)_{360}$ (CF)	$V(100)_{10day}$ (CF)
Basin 1A*	114188	2.62	0.0%	0.0%	0.0%	100.0%	4.70	12.32	*2.12*	*20173*	*35398*
Basin L**	570139	13.09	100.0%	0.0%	0.0%	0.0%	1.56	20.42	*0.53*	*25181*	*25181*
TOTAL CONTRIBUTING TO POND L								32.74		45354	60579

* - Drainage Area One

** - Mesa del Sol Roadway Rough Grading Plan (Area remaining after Basin 1A removed)



LOCATION MAP
ZONE ATLAS INDEX MAP R-16

Mesa del Sol

Bohannan ▲ Huston Inc.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

ENGINEER
Michael Balaskovits
MICHAEL BALASKOVITS NEW MEXICO 18187 LICENSED PROFESSIONAL ENGINEER 5-22-09

PROJECT

Mesa Del Sol
Innovation Park - Drainage Area One
COA Prjt #775478 Site Infrastructure Drainage
Albuquerque, New Mexico

Introduction/Purpose

This submittal describes a proposed interim drainage plan for Drainage Area One (DA1) within the Mesa del Sol Innovation Park to support the construction of a portion of the infrastructure associated with COA Project# 775478. This drainage management plan combines current site conditions, DA1 guidelines (COA HYDRO FILE# R16/DA1), and the Mesa del Sol (MDS) Roadway Rough Grading Plan drainage concepts. In addition, it will describe the drainage required to serve the proposed infrastructure that lies within DA1 which includes the extension of Solar Mesa Avenue from Turing Dr. to the eastern boundary of Track OS-3-A.

Existing Conditions

The drainage area along the northwest side of the Innovation Park (referred to here after as DA1) within Mesa del Sol is partially developed and slopes 0.5% to 1.0% from northwest to southeast. Solar Mesa Ave. from University Blvd to Turing Dr. has been constructed under COA Prjt # 775481 and 775487. Currently it slopes from west to east and surface drains into a temporary pond constructed with the MDS Roadway Rough Grading Plan. The remainder of the drainage for this area goes to a series of temporary retention ponds graded with the Roadway Rough Grading Plan.

Offsite Drainage

Offsite drainage from the west of the site has been addressed as part of the University Boulevard Construction Project (COA Hydro # R16/D3). Drainage from the north has been mitigated as part of the approved MDS Roadway Rough Grading Plan. Any drainage from the east and south of the block will be mitigated and rerouted around the block and drains toward the aforementioned temporary retention ponds graded with the Roadway Rough Grading Plan. All drainage generated onsite will be retained under the 100yr 10day storm event and not effect surrounding areas.

Proposed Site Drainage

The infrastructure associated with the COA Prjt# 775478 within DA1 will include the extension of Solar Mesa Ave paving, along with storm drainage which will accept flows from the developed Solar Mesa Ave. and a portion of Turing via inlets and outfall into a temporary pond located where the final regional retention pond will be. These improvements will follow the concepts outlined in the approved DA1 Drainage Management Plan whereas the portions undeveloped will continue to drain as noted in the MDS Roadway Rough Grading Plan.

Drainage generated by the extension of Solar Mesa Avenue and a portion of Turing Drive constructed under COA Prjt# 775487 (Basin 1A) along with the existing Basin L (as defined in the Roadway Rough Grading Plan) will be conveyed to the temporary retention pond (Modified Pond L) via surface flow and the new storm drainage within Solar Mesa Ave. The flow generated by both sub-basins, adjusted with this construction, is shown within the table labeled MESA DEL SOL DRAINAGE AREA 1 – COA Prjt# 775478 DEVELOPED HYDRAULIC CALCULATIONS. In addition the capacity of each road based on Manning's equation is shown on the overall drainage map.

The existing temporary ponds were sized, and adjusted, in accordance with the methodology outlined in the DPM section 22.2. For the interim, the volume of temporary retention required (Vreq) is 60,580 CF and the original volume of retention provided (Vpr) was 61,960 CF but due to the installation of the storm drain, with the COA Project# 775478, the bottom needed to be adjusted down from 5288.5 to 5286 as reflected in Drainage Area 1 (DA1). This adjustment increased the volume provided to 67,970 CF.

Floodplain

In accordance with FEMA Community Map Panel #35001C0555 E, the site is not located within a floodplain.

Conclusion

This drainage submittal has been prepared in accordance with City of Albuquerque requirements. This plan demonstrates the interim grading and drainage concepts with the construction of COA Project# 775478. The implementation of these concepts would result in the safe retention of the 100 yr, 10 day storm event. This drainage management plan is submitted in support of DRC approval of COA Prjt # 775478.

LEGEND

- DRAINAGE AREA BOUNDARY
- SUB-BASIN LINE
- BASIN 1J — SUB-BASIN ID
- DEVELOPED FLOW ARROW
- EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

NOTE:
A CROSS-LOT DRAINAGE EASEMENT FOR ALL THE TRACTS WITHIN THIS BLOCK SHALL BE GRANTED WITH THE REQUIRED PLAT

NOTE: OFFSITE FLOWS FROM THE WEST WILL OUTFALL TO THE REGIONAL RETENTION POND. THIS OFFSITE DRAINAGE WAS NOT ANALYZED AS UNDEVELOPED.

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DRAWN BY
REVIEWED BY
DATE MAY 2009
PROJECT NO.
DRAWING NAME
COA PR#775478 DRAINAGE MANAGEMENT EXHIBIT
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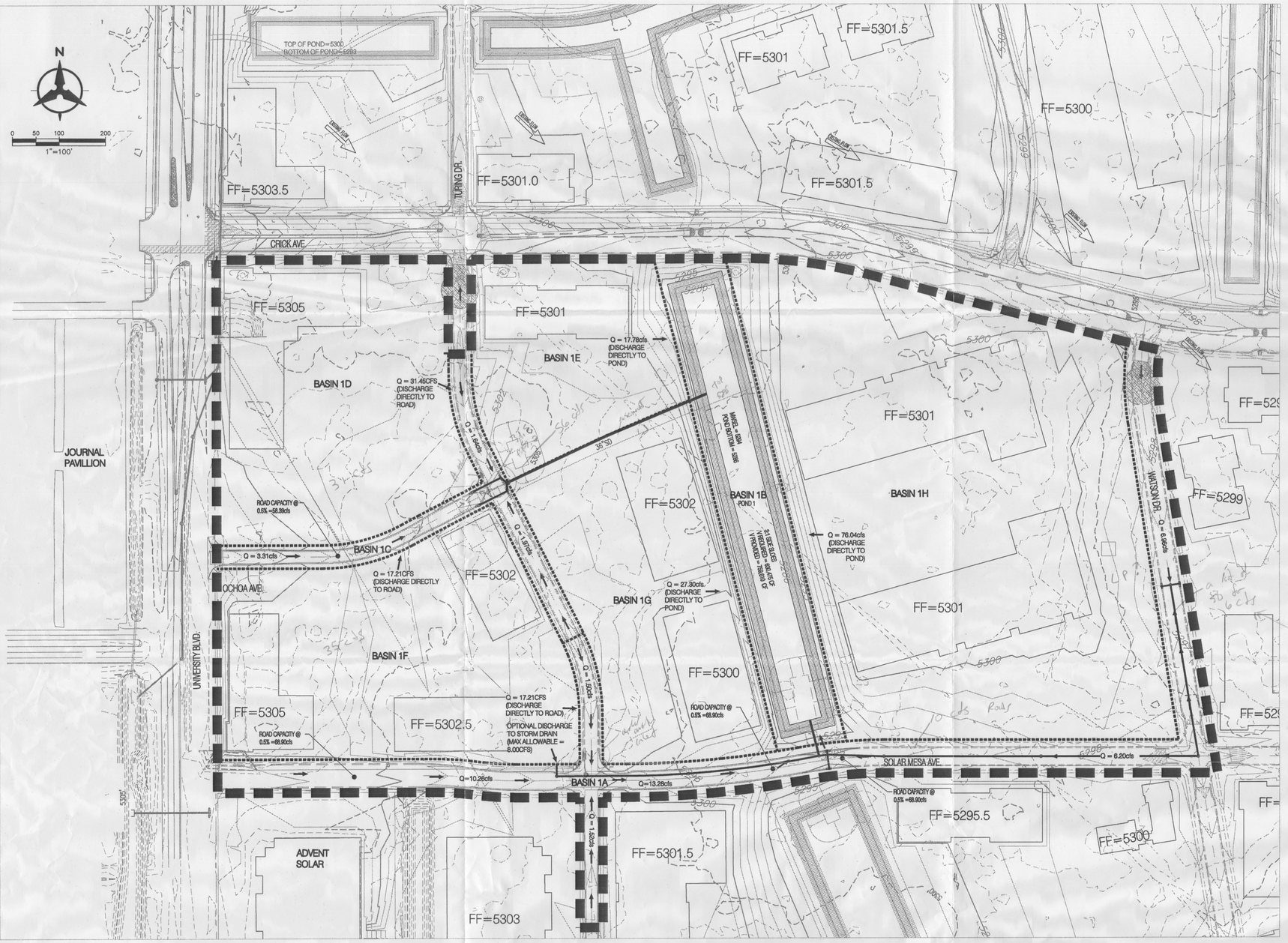
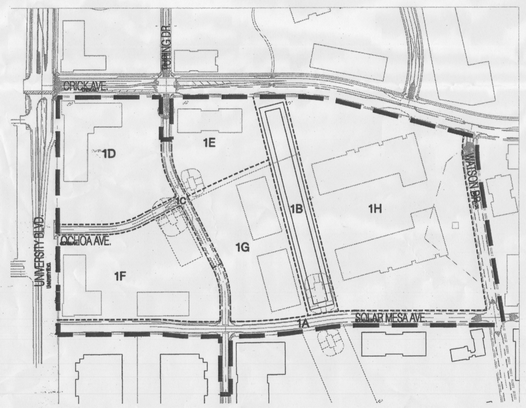




BASIN MAP

MESA DEL SOL DRAINAGE AREA 1 - DEVELOPED HYDRAULIC CALCULATIONS

Ultimate Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2

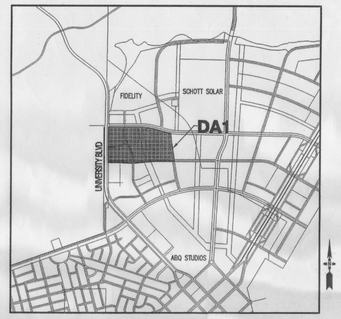
BASIN ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (cfs)	WT E (inches)	$V(100)_{360}$ (CF)	$V(100)_{10day}$ (CF)
Basin 1A (Surrounding Roads)	245086	5.63	0.0%	0.0%	0.0%	100.0%	4.70	26.44	2.12	43299	75977
Basin 1A1	95063	2.18	0.0%	0.0%	0.0%	100.0%	4.70	10.26	2.12	16794	29470
Basin 1A2	13914	0.32	0.0%	0.0%	0.0%	100.0%	4.70	1.50	2.12	2458	4313
Basin 1A3	14082	0.32	0.0%	0.0%	0.0%	100.0%	4.70	1.52	2.12	2488	4365
Basin 1A4	57503	1.32	0.0%	0.0%	0.0%	100.0%	4.70	6.20	2.12	10159	17826
Basin 1A5	64524	1.48	0.0%	0.0%	0.0%	100.0%	4.70	6.96	2.12	11399	20002
Total								26.44			
Basin 1B (Open Space/Regional Retention Pond)	162944	3.74	0.0%	50.0%	50.0%	0.0%	2.71	10.14	0.96	12968	12968
Basin 1C (Interior Roads)	64193	1.47	0.0%	0.0%	0.0%	100.0%	4.70	6.93	2.12	11341	19900
Basin 1C1	30680	0.70	0.0%	0.0%	0.0%	100.0%	4.70	3.31	2.12	5420	9511
Basin 1C2	15244	0.35	0.0%	0.0%	0.0%	100.0%	4.70	1.64	2.12	2693	4726
Basin 1C3	18268	0.42	0.0%	0.0%	0.0%	100.0%	4.70	1.97	2.12	3227	5663
Total								6.93			
Basin 1D	307303	7.05	0.0%	10.0%	0.0%	90.0%	4.46	31.45	1.99	50859	87735
Basin 1E	173716	3.99	0.0%	10.0%	0.0%	90.0%	4.46	17.78	1.99	28750	49596
Basin 1F	336363	7.72	0.0%	10.0%	0.0%	90.0%	4.46	34.42	1.99	55668	96032
Basin 1G	266740	6.12	0.0%	10.0%	0.0%	90.0%	4.46	27.30	1.99	44145	76154
Basin 1H (Bldg 2&3)	742954	17.06	0.0%	10.0%	0.0%	90.0%	4.46	76.04	1.99	122959	212113
Total								230.49		369988.06	630474.44

REGIONAL RETENTION POND CALCULATIONS

Pond 1

Top Area:	121957 SF
Bottom Area:	70302 SF
Depth:	8 FT
Volume*:	759,608 CF
Total Volume	
Provided (Vp)=	***759,610 CF***
Volume Required (Vr)=	***630,475 CF***

*Conic Method - V=h/3(A1 +A2+sqrt(A1*A2))



LOCATION MAP
ZONE ATLAS INDEX MAP R-16

Mesa del Sol

Bohannan ▲ Huston Inc.
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ENGINEERING ▲ SPATIAL DATA ▲ ADVANCED TECHNOLOGIES

ENGINEER
Michael Balaskovits
MICHAEL BALASKOVITS NEW MEXICO 18187 5-22-09 LICENSED PROFESSIONAL ENGINEER

PROJECT

DRAINAGE MANAGEMENT PLAN

Introduction/Purpose
This submittal describes the drainage scheme for Drainage Area One (DA1) within the Mesa del Sol Innovation Park. This drainage management plan will serve as guidelines for ultimate pond sizing and drainage calculations for the block. This plan will provide a framework diagram for future hydrology submittals including but not limited to sites and work order approvals.

Existing Conditions
The block at the north end of the Innovation Park (referred to here after as DA1) within Mesa del Sol is currently undeveloped and slopes 0.5% to 1.0% from the west to east. The final outfall for this current drainage is a series of playas that extend down the middle of the proposed Innovation Park to the south. The block being analyzed will be bound by University Boulevard to the west, Crick Avenue to the north, Watson Drive to the east, and Solar Mesa Avenue to the south.

Offsite Drainage
Offsite drainage from the west of the site has been addressed as part of the University Boulevard Construction Project (COA Hydro # R16/D3). Drainage from the north has been mitigated as part of the approved Drainage Area Zero Drainage Management Plan (COA Hydro #R16/DA0). Any drainage from the east and south of the block will be mitigated and rerouted around the block toward the aforementioned current playa system. All drainage generated onsite will be retained under the 100yr 10day storm event and not effect surrounding areas.

Proposed Site Grading
The slope of the DA1 basin under proposed conditions is similar to existing conditions. The block will have a centrally located, permanent, retention pond within an open space/drainage tract. The pond is designed to retain the 100 year, 10 day storm generated by the site.

Drainage generated by the roads within the Block 1 basin will be will be conveyed to the regional retention pond via surface flow and storm drainage. Each site will be analyzed on a site by site basis. The drainage for sites furthest from the pond will be conveyed to the pond by either direct storm drain or surface flow within the streets where allowable. The flow generated by each sub-basin is shown within the table labeled MESA DEL SOL DRAINAGE AREA 1 - DEVELOPED HYDRAULIC CALCULATIONS. In addition the capacity of each road based on Manning's equation is shown on the overall drainage map.

The regional retention ponds will be subject to future site planning considerations which will incorporate water quality facilities, along with aesthetically pleasing features such as a trail system, pedestrian amenities, and sedimentation basin facilities. In addition, infiltration basins will be installed in the retention ponds to manage nuisance flows and provide a positive discharge of ponded water over time; however, the infiltration does not reduce the 100 year, 10 day stored ponding volume requirements.

The ponds are sized in accordance with the methodology outlined in the DPM section 22.2. Developed land treatments for the majority of this block were assumed to be 90% treatment D and 10% treatment B (See MESA DEL SOL DRAINAGE AREA 1 - DEVELOPED HYDRAULIC CALCULATIONS for basin calculations and land treatments). The volume of retention required (Vr) is 630,480 CF and the volume of retention provided (Vp) is 759,610 CF.

Floodplain

In accordance with FEMA Community Map Panel #35001C0555 E, the site is not located within a floodplain.

Conclusion

This drainage submittal has been prepared in accordance with City of Albuquerque requirements. This plan demonstrates the proposed grading and drainage concepts. The implementation of these concepts would result in the safe retention of the 100 yr, 10 day storm event. Individual sites will be subject to separate hydrology approval in conjunction with the guidelines set forth in this drainage management plan. This drainage management plan is submitted is support of future development within the block, including building sites and road infrastructure.

LEGEND

- BASIN LINE
- SUB-BASIN LINE
- BASIN 1J — SUB-BASIN ID
- DEVELOPED FLOW ARROW
- EXISTING FLOW — EXISTING FLOW ARROW
- DIVERSION (SWALE/BERM)
- Q = 52.6cfs — DEVELOPED CONDITION FLOW
- PROPOSED STORM DRAIN

NOTE:
A CROSS-LOT DRAINAGE EASEMENT FOR ALL THE TRACTS WITHIN THIS BLOCK SHALL BE GRANTED WITH THE REQUIRED PLAT

NOTE: FINISHED FLOORS AND PROPOSED SHOWN ARE CONCEPTUAL.

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REVIEWED BY
DATE MAY 2009
PROJECT NO.
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Mesa Del Sol
Innovation Park - Drainage Area One
Albuquerque, New Mexico

DRAINAGE MANAGEMENT PLAN

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