

# CITY OF ALBUQUERQUE



October 16, 2008

Mario G. Juarez-Infante, P.E.  
Attn: Denise Peralta  
Wilson & Company  
4900 Lang NE  
Albuquerque, NM 87109

**Re: Hubert Humphrey Site Improvements**  
**9801 Academy Hills Drive NE, Grading Plan**  
**Engineer's Stamp dated 08-18-08 (E-21/D004)**

Dear Mr. Juarez-Infante,

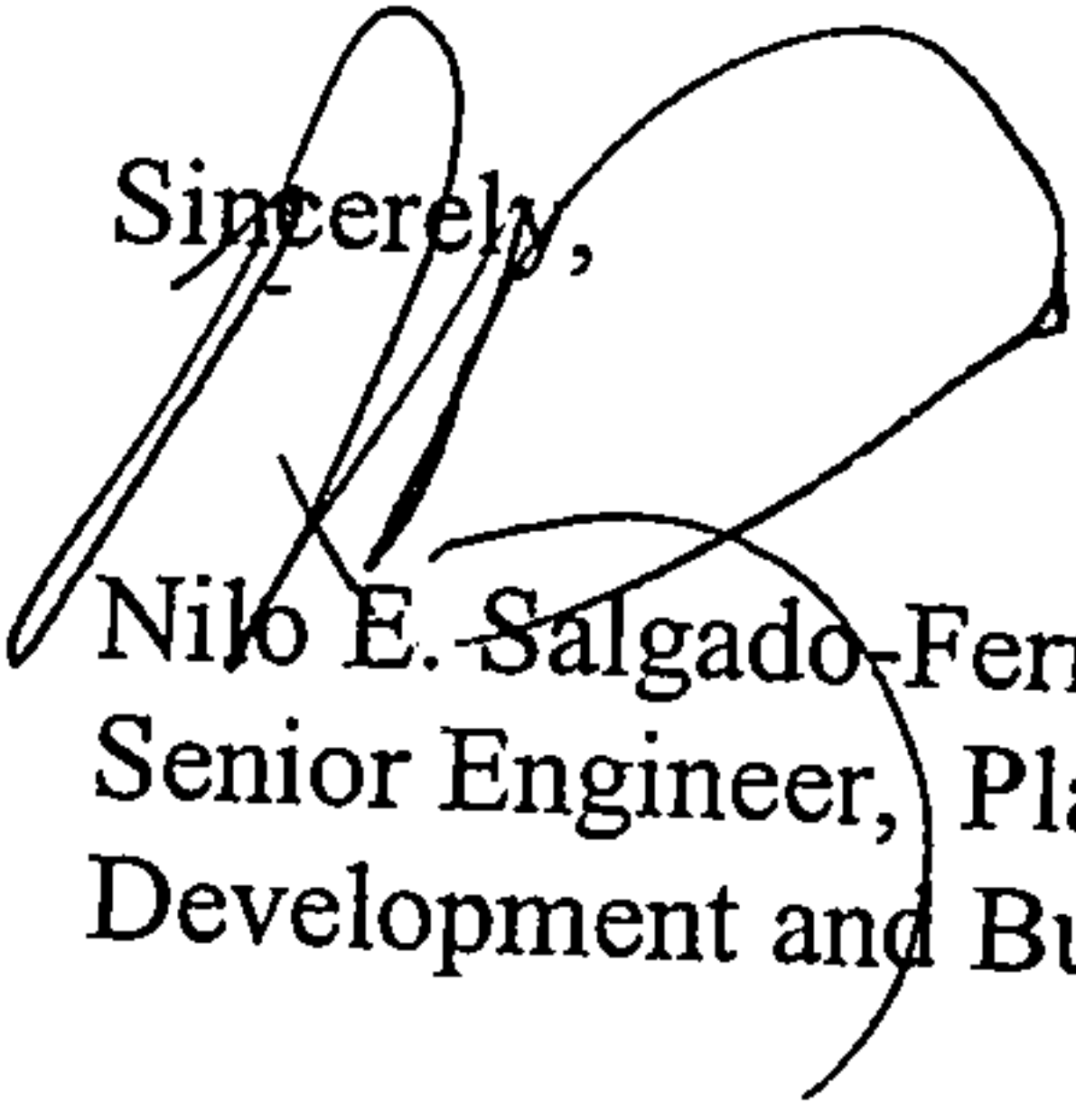
Based upon the information provided in your submittal received 08-19-08 and re-submittal (calculations and details), the above referenced plan is approved for Grading and Paving Permit. Upon completion, please attach an Engineer Certification for our files.

If you have any questions, you can contact me at 924-3630.

PO Box 1293

Sincerely,

Albuquerque

  
Nilo E. Salgado-Fernandez, P.E.  
Senior Engineer, Planning Dept.  
Development and Building Services

NM 87103

[www.cabq.gov](http://www.cabq.gov)

C: File

# HUBERT HUMPHREY ELEMENTARY SCHOOL

## Master Drainage Report

**Site Location:** Hubert Humphrey Elementary School is located on Academy Hills Drive east of Concordia Boulevard. Master site development includes a new bus lane, student drop-off/pick-up lane, playground sandboxes and equipment, classroom addition, and a new staff parking lot. The bus lane and parking lot additions will include paving and concrete curb and gutter.

**Methodology:** Section 22.2 of City of Albuquerque DMP was followed to calculate the design volume. The charts and formulas in Part A were followed using the 100-year frequency 24-hour rainfall as the design storm. The site is located in Zone 3 as determined from Table A-1. The total storm volume was calculated as per section A.5. The peak discharge was calculated as per section A.6. No down stream capacity analysis was completed as part of this report. Early discussions with city hydrologist indicated that pre-existing discharge rate could be maintained for master site build-out.

**Existing Conditions:** The site is comprised of three major land treatments, irrigated lawn, vacant playground and impervious areas. The site slopes east to west between 1.3% and 12.0%. The terrain is terraced tree tier with the east being the high tier, and the west end the lower tier. The site is subdivided into three (3) basins; Basins 101 through 103. Each basin is designated as shown on the grading & drainage plan and discharged as described below.

Basin 101 encompasses the baseball field, existing pond, the three playground sandboxes located east of the baseball field and surrounding area. Also, 50% of the basketball court is included in this basin. All drainage from this basin sheet flows into the existing detention pond located in the southwest corner of the site.

Basin 102 encompasses the area north of the baseball field, all the portables located in the northeast corner of the site, the northern halves of the main building and existing roadway located on the east side of the site. Drainage from this basin sheet flows west through a swale located on the north end of the site and then south into the detention pond located on the southwest corner of the site.

Basin 103 encompasses the southern halves of the main building and existing roadway located on the east side of the site, the parking lot located on the south side of the site and the other 50% of the basketball court. All drainage from this basin sheet flows south into Academy Hills Drive and routed west to Concordia Boulevard.

Existing volumetric runoff and peak discharge quantities are as shown below:

Table 1 – Existing Conditions							
Basin	Area (ac)	Treatment				V <sub>360</sub> (ac-ft)	Q <sub>p</sub> (cfs)
		A (%)	B (%)	C (%)	D (%)		
101	4.11	0	6.77	86.7	6.53	0.457	14.4
102	4.43	0	5.6	55.5	38.9	0.622	17.8
103	2.51	0	0	28.0	72.0	0.431	11.5
Total	11.05					1.510	43.7

**Table 1 - provides a breakdown of existing volumetric runoff and peak discharge of the site.**

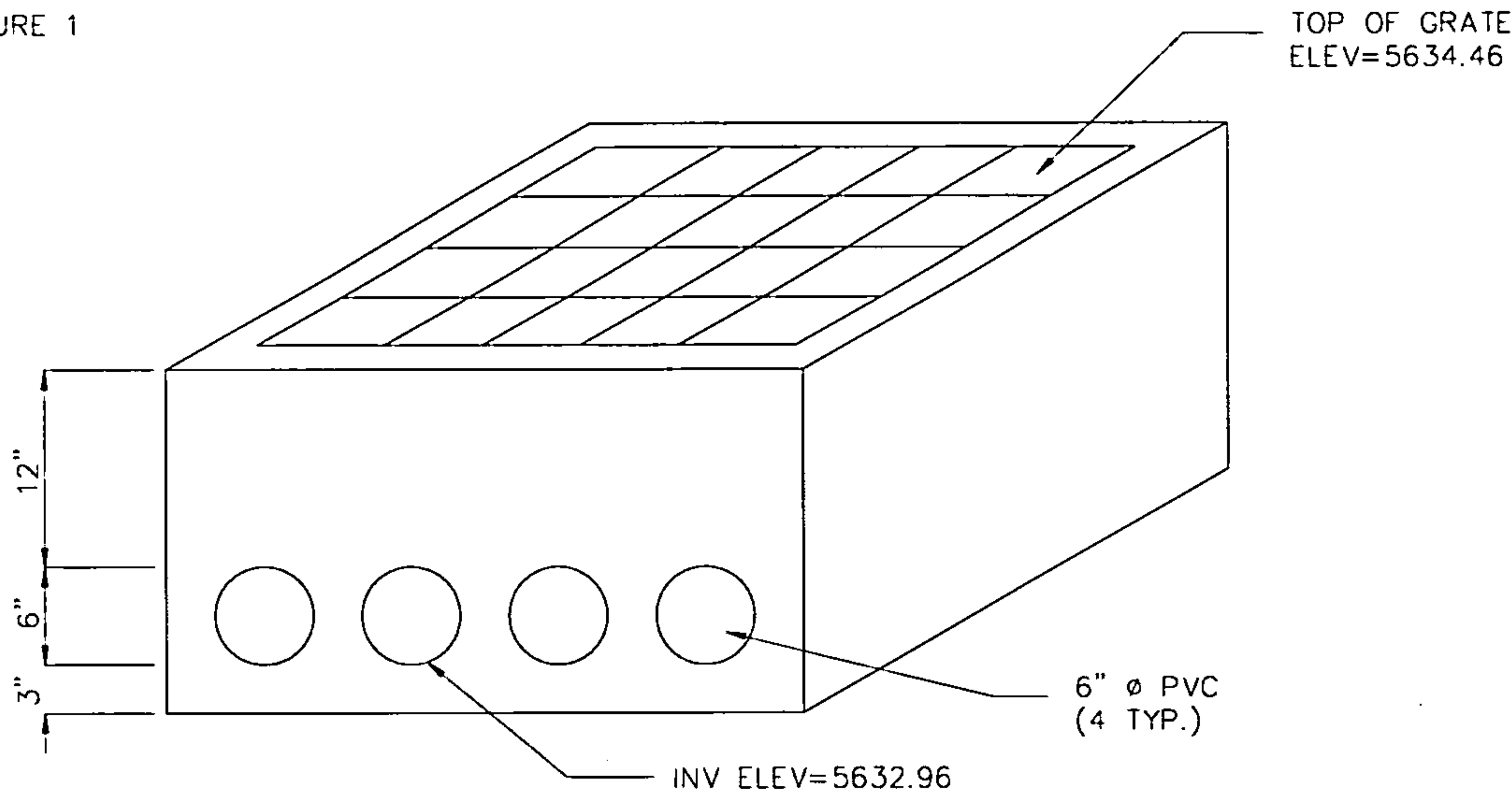
The existing detention pond collects Basins 101 and 102 runoff; Basin 103 is not collected. Basin 103 drains directly onto Academy Hills Drive, approximately 0.431 acre-ft. The pond has a control outlet discharge onto Concordia Drive. Hence, total volumetric runoff onto right-of-way is approximately 43.7 cfs or 1.510 acre-ft.

The existing detention pond has an approximate capacity of 0.047acre-ft. Presently, the pond drains onto Concordia Boulevard in the following manner: (1) A type 'D' inlet with top of grate elevation = 5634.46 has 4 – 6" diameter pipes set at approximate elevation = 5632.96, (2) flows



are conveyed west through 2-24" sidewalk culverts and discharged freely onto Concordia Drive right-of-way. The high contour elevation is along the west end of the pond and is equal to 5634.0. Hence, the maximum head available at the outlet structure is approximately 0.5ft measured from high contour elevation to center of pipe (see Figure 1 for existing outlet structure). Employing the orifice equation,  $Q = CA(2gh)^{1/2}$ , the outflow through the outlet pipe structure is approximately 5.3 cfs (i.e. 1.3 cfs per pipe). Beyond the 5634.0 contour elevation, runoff begins to overtop the sidewalk and spills onto Concordia Drive. Drainage into Concordia Drive sheet flows into Layton Avenue, south to Estrellita Del Norte, and is collected in the Bear Arroyo.

FIGURE 1



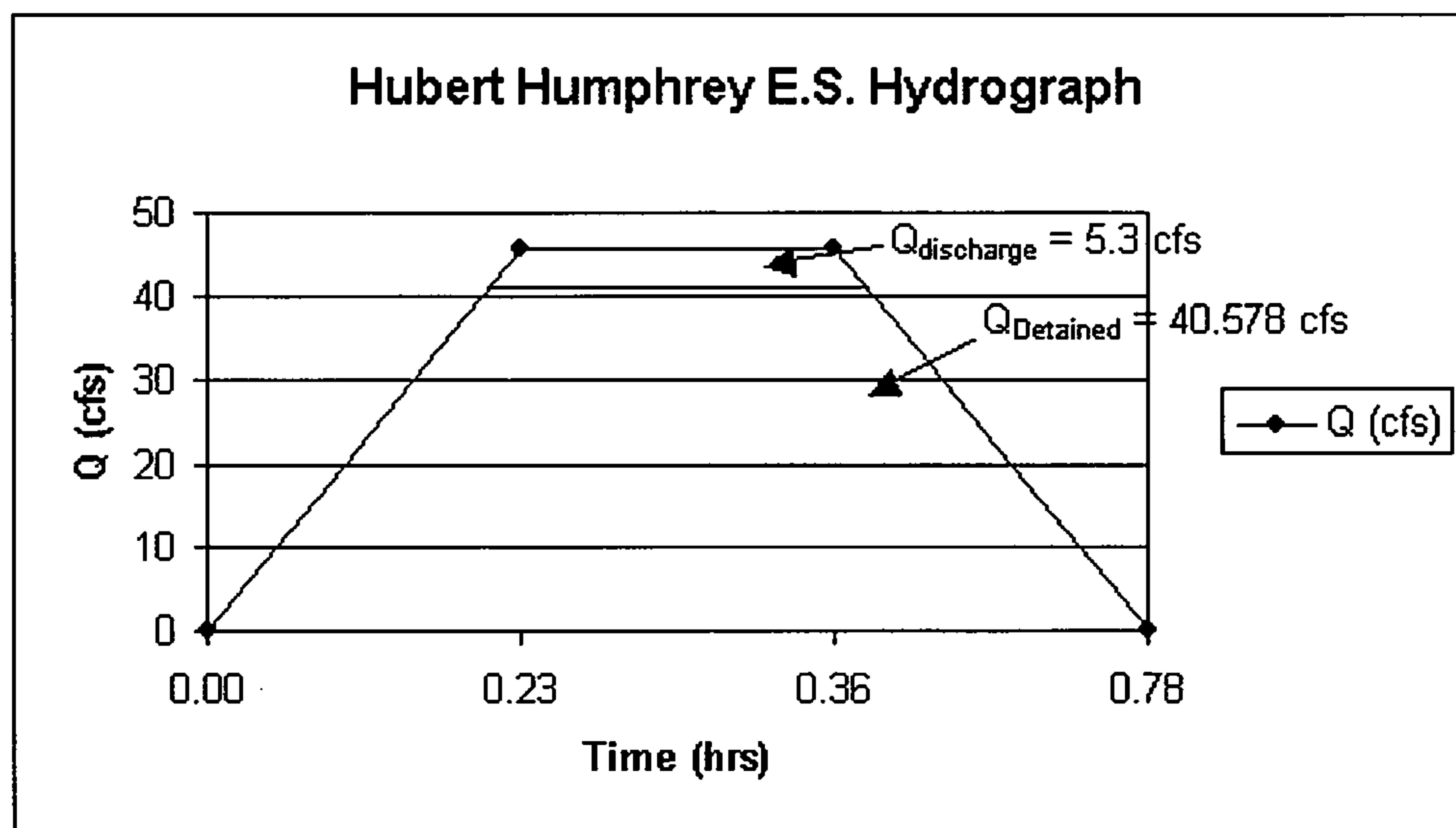
TYPE 'D' OUTLET STRUCTURE  
SCALE 1" = 1'

**Proposed Conditions:** With the master site development all existing culvert crossings will be eliminated along the north and west fence of the school. The detention pond will be regarded to accommodate post conditions by increasing the cross-sectional area. The west berm will be raised making the high contour elevation 5636.0. The outlet structure will be salvaged and modified. Orifice plates will be installed at the outlet structure to accommodate increased head and control 5.3 cfs outflow. The required detention pond capacity is 1.606 acre-ft (see Hydrograph below).

Proposed improvements to the site will increase the volumetric runoff from 1.51 ac-ft to 1.641 ac-ft. Hence, an increase of 8.68% (0.131 ac-ft). Peak discharge will also increase from 43.7 cfs to 45.7 cfs or an increase of 4.58%. All basins, except Basin 202, contribute runoff to the detention pond. Approximately 1.606 acre-ft will be detained by the pond. The total pond capacity is 1.65 acre-ft.

Given:	$t_c$ (hr) =	0.2	Find:	$t_p$ (hr) =	0.232111
	$A_D$ (ac) =	5.469		Peak Time (hr) =	0.123666
	$A_T$ (ac) =	11.056		$t_B$ (hr) =	0.783025
	$Q_p$ (cfs) =	45.758			
	$E$ (in) =	1.781			

Time (hrs)	Q (cfs)
0.00	0
0.23	45.758
0.36	45.758
0.78	0



The proposed basin boundaries, Basins 201 thru 208 changed from the existing boundaries as follows: Basin 201 encompasses the eastern half of the main building and all playground equipment located on the east side of the site. Local drains collect surface runoff. Building roof drains will tie to an underground storm drain and routed to the pond.

Basin 202 encompasses 75% of the existing driveway located in the southeast corner of the site. Drainage from this basin discharges directly onto Academy Hills Drive and south to Concordia Road.

Basin 203 encompasses the remaining 25% of the existing driveway; located in the northeast corner of the site. Also, included is the proposed bus lane located on the north end of the site. Drainage from this basin sheet flows west, is collected by a transverse inlet, and conveyed by underground storm drain to the pond.

Basin 204 encompasses the proposed parking lot to be located at the northeast corner of the site. Drainage sheet flows west into a storm drain inlet and conveyed to the pond.

Basin 205 includes the portables area and the northern portion of the main building. Drainage from this basin is collected with local drain inlet and routed to the pond.

Basin 206 includes the southern portion of the main building and the southern parking lot. This basin drains in a westerly direction into the existing detention pond through a concrete rundown.

Basin 207 encompasses all of the proposed playground area and the northern half of the proposed new classroom building. Drainage from this basin sheet flows west to the pond.

Basin 208 includes the baseball field, the southern half of the proposed new classroom building and the existing detention pond. This drainage sheet flows directly into the existing detention pond.

**Phase I** improvements includes the construction of the student drop-off/pick-up lane, pond, and a portion of the underground storm drain (see Grading & Drainage Plan). A manhole will be constructed as part of phase I near the Northwest corner of the site. This manhole will accommodate expansion of underground storm drain for future construction phases.

Proposed volumetric runoff and peak discharge quantities are as shown below:

Table 2 – Proposed Conditions							
Basin	Area (ac)	Treatment				V <sub>360</sub> (ac-ft)	Q <sub>p</sub> (cfs)
		A (%)	B (%)	C (%)	D (%)		
201	1.06	0	24.5	17.4	58.1	0.161	4.42
202	0.215	0	0	40.0	60.0	0.035	0.944
203	1.02	0	0	39.5	60.5	0.165	4.49
204	0.733	0	0	0	100.0	0.144	3.68
205	0.842	0	0	29.8	70.2	0.143	3.83
206	1.60	0	0	14.9	85.1	0.293	7.66
207	1.56	0	40.3	0	59.7	0.232	6.32
208	4.02	0	6.3	81.6	12.1	0.468	14.41
Total	11.05					1.641	45.7

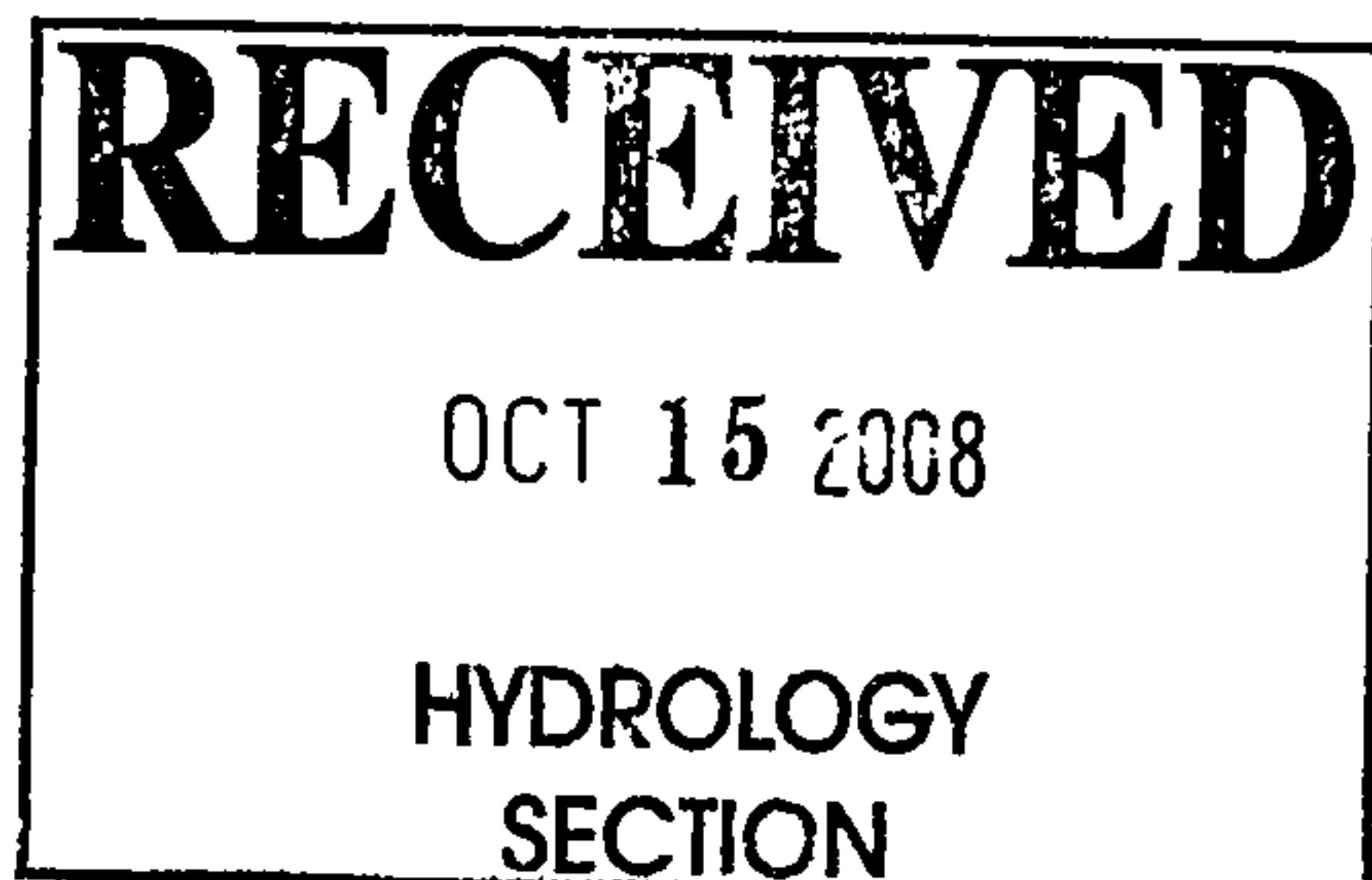
Table 2 - provides a breakdown of proposed volumetric runoff and peak discharge of the site.

**Conclusion:** It will be necessary to increase the storage capacity of the existing detention pond from 0.047 acre-ft to approximately 1.65 acre-ft. The pond will be constructed as part of Phase I. Construction will require the pond be extended further to the east, deepened and stabilized with 3:1 slopes. The pond floor drains east to west at 0.35%. The site is located near the foothills of the eat mountains making the terrain relatively steep. Minimizing the slope of the pond floor, allows for construction of pond without constructing retaining walls and or impacting future expansion of the parking lot along Academy Hills. In addition, orifice plates will be installed as part of Phase I. The outlet structure will be modified to accommodate future expansion of the site. Full build-out water surface elevation will be 5636.0. The pond will continue to discharge at a controlled rate of 5.3 cfs, equal to historical outflow. All local drainage is collected and conveyed by the Bear Arroyo as shown on Exhibit A.

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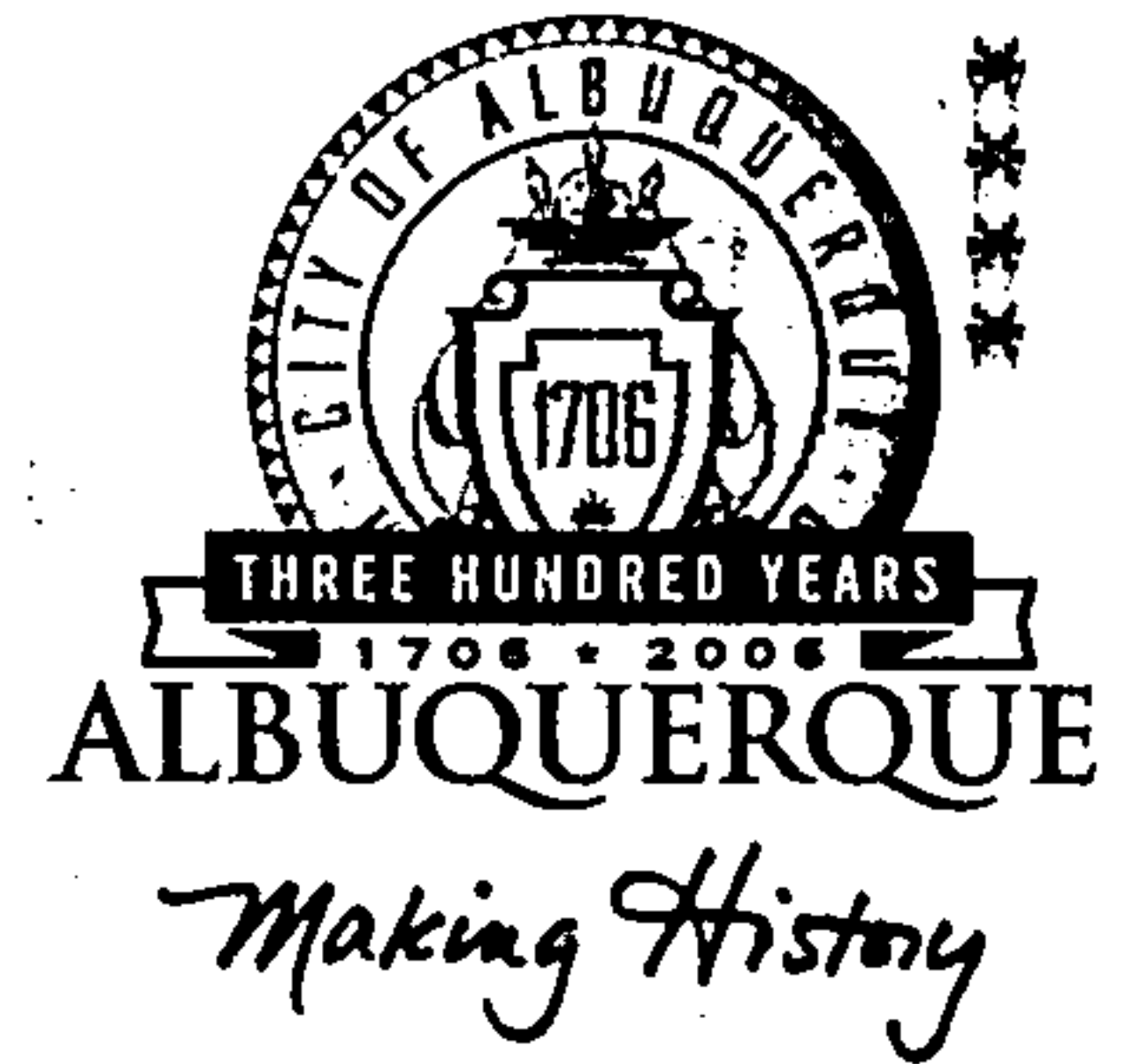
**Hubert Humphrey Elementary School**  
Pond Volume Calculations

Elevation	Area		Volume	Cum Volume
(ft)	(sq ft)	(ac)	(ac-ft)	(ac-ft)
5634	21484	0.493	0	0.000
5635	36233	0.832	0.663	0.663
5636	45523.3	1.045	0.938	1.601





# CITY OF ALBUQUERQUE



November 21, 2005

Mr. Scott McGee, P.E.  
**ISAACSON & ARFMAN, PA**  
128 Monroe Street NE  
Albuquerque, NM 87108

**Re: HUBERT HUMPHREY ELEMENTARY SCHOOL ADDITION**  
**9801 Academy Hills Dr. NE**  
**Approval of Permanent Certificate of Occupancy (C.O.)**  
**Engineer's Stamp dated 05/21/2004 (E-21/D4)**  
**Certification dated 11/18/2005**

Dear Scott:

P.O. Box 1293

Based upon the information provided in your submittal received 11/21/2005, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

Albuquerque

If you have any questions, you can contact me at 924-3982.

New Mexico 87103

Sincerely,

*Arlene V. Portillo*

Arlene V. Portillo  
Plan Checker, Planning Dept. - Hydrology  
Development and Building Services

[www.cabq.gov](http://www.cabq.gov)

C: Phyllis Villanueva  
File



# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

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June 9, 2004

Scott McGee, PE  
Isaacson & Arfman, P.A.  
128 Monroe Street NE  
Albuquerque, NM 87108

**RE: Hubert Humphrey Elementary School Kindergarten Classroom Addition  
Grading and Drainage Plan  
Engineer's Stamp Dated 5-21-04 (E-21/D4)**

Dear Mr. McGee:

Based upon the information provided in your submittal received 5-24-04, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. If you have any questions regarding this permit please feel free to call the DMD Storm Drainage Design section at 768-3654 (Charles Caruso) or 768-3645 (Bryan Wolfe).

If you have any questions, please contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE  
Principal Engineer, Planning Dept.  
Development and Building Services

C: Charles Caruso, DMD Storm Drainage Design  
File





# ***City of Albuquerque***

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

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August 21, 2001

Mario Juarez-Infante  
Wilson & Company  
4900 Lang Avenue NE  
Albuquerque New Mexico 87109

**RE: Grading and Drainage Plan For Hubert Humphrey Elementary School (E21-D4)**  
**Dated August 9, 2001**

Dear Mr. Juarez-Infante:

The above referenced drainage plan is approve for Building Permit Phase I, and the master plan is approved. Please submit drainage plans for the future phases for review and approval. Upon completion of Phase I the design engineer will need to certify the phase.

If you have any questions please call me at 924-3982.

Sincerely,

Carlos A. Montoya  
City Floodplain Administrator