

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(Rev. 06/22/2005)

PROJECT TITLE: Raw Water Pump Sta. COA Proj 6807.03 ZONE MAP/DRG. FILE # B14
 DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: Parcel C of Alameda Open Space Subdivision
 CITY ADDRESS: 9521 Rio Grande Blvd NW
 COUNTY: _____

ENGINEERING FIRM: Boyle Engineering
 ADDRESS: 6501 Americas Parkway #800
 CITY, STATE: Albuquerque 87110
 CONTACT: Wayne Kelly
 PHONE: 883-7700
 ZIP CODE: 87110

OWNER: City of Albuquerque Bernalillo Water Utility Authority
 ADDRESS: _____
 CITY, STATE: _____
 CONTACT: John Stamp
 PHONE: 768 3631
 ZIP CODE: _____

ARCHITECT: _____
 ADDRESS: _____
 CITY, STATE: _____
 CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

SURVEYOR: _____
 ADDRESS: _____
 CITY, STATE: _____
 CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

CONTRACTOR: _____
 ADDRESS: _____
 CITY, STATE: _____
 CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
☒ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT
☐ ENGINEER'S CERT (TCL)
☐ ENGINEER'S CERT (DRB SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☐ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM)
☐ CERTIFICATE OF OCCUPANCY (TEMP)
☐ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☒ YES
☐ NO
☐ COPY PROVIDED

SUBMITTED BY: Wayne Kelly DATE: 9/1/05

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres. ✓
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.



Raw Water Pump Station Site Drainage Calculations

Calculations per COA DPM, Section 22.2 – Hydrology

Project Area, $A_T = 1.49$ acres

This project site is in Precipitation Zone 2 – between the Rio Grande River and San Mateo Blvd (Table A-1 and Figure A-1).

For Zone 2, the depth in inches of a 100-year storm:

100 year - 6 hour event, $P_{360} = 2.35$ inches (Table A-2)

100 year - 10 day event, $P_{10\text{ DAY}} = 3.95$ inches (Table A-2)

Land treatments for this site are Land Treatment C & D (Table A-4).

The 100 year peak discharge for Zone 2:

Land Treatment C = 3.14 cfs/acre (Table A-9)

Land Treatment D = 4.70 cfs/acre (Table A-9)

Existing conditions: Land Treatment C, 100 y – 6 hr storm

E_C = Excess Precipitation for Land Treatment C = 1.13 inches (Table A-8)

A_C = Area of Land Treatment C = Project Area, $A_T = 1.49$ acres

Q_{PC} = Peak Discharge = $Q_{PC}A_C$ (Equation a-10)

= 3.14 cfs/acre * 1.49 acre

= 4.68 cfs for 100 y storm

Proposed Land Treatment D, 100 y – 6 hr storm

E_D = Excess Precipitation for Land Treatment D = 2.12 inches (Table A-8)

$A_{\text{roof}} = 12,798 \text{ ft}^2 = (12,798 \text{ ft}^2)(0.000023 \text{ acre/ft}^2) = 0.29 \text{ acre}$

$A_{\text{pavement}} = (817 \text{ ft} * 12 \text{ ft}) + (32 \text{ ft} * 40 \text{ ft}) = (11,084 \text{ ft}^2)(0.000023 \text{ acre/ft}^2) = 0.25 \text{ acre}$

A_D = Area of Land Treatment D = $A_{\text{roof}} + A_{\text{pavement}} = 0.54 \text{ acre}$

Q_{PD} = Peak Discharge = $Q_{PD}A_D$ (Equation a-10)

= 4.70 cfs/acre * 0.54 acre

= 2.54 cfs for 100 y storm

Proposed Land Treatment C, 100 y – 6 hr storm

E_C = Excess Precipitation for Land Treatment C = 1.13 inches (Table A-8)

A_C = Area of Land Treatment C = $A_T - A_D = 0.95 \text{ acre}$

Q_{PC} = Peak Discharge = $Q_{PC}A_C$ (Equation a-10)

= 3.14 cfs/acre * 0.95 acre

= 2.98 cfs for 100 y storm

Total Peak Discharge for proposed Land Treatments C & D

$$\begin{aligned}
 Q_{PT} &= \text{Total Peak Discharge} = Q_{PC}A_C + Q_{PD}A_D \text{ (Equation a-10)} \\
 &= 2.98 \text{ cfs} + 2.54 \text{ cfs} \\
 &= 5.52 \text{ cfs for 100 y storm}
 \end{aligned}$$

Existing Run-off from Site:

$$\begin{aligned}
 WE_C &= \text{Weighted Excess Precipitation} = E_C \cdot A_C / A_C \text{ (Equation a-5)} \\
 &= (1.13 \text{ inches} \cdot 1.49 \text{ acre}) / 1.49 \text{ acre} \\
 &= 1.13 \text{ inches} \\
 V_{360} &= \text{Volume 100 y - 6 hr event} = WE_C \cdot A_C \text{ (Equation a-6)} \\
 &= (1.13 \text{ inches} \cdot 1.49 \text{ acre}) / 12 \\
 &= 0.14 \text{ acre-ft} \\
 V_{10 \text{ DAY}} &= \text{Volume 100 y - 10 day event} \\
 &= V_{360} + A_D(P_{10 \text{ DAY}} - P_{360}) / 12 \text{ (Equation a-9)} \\
 &= 0.14 \text{ acre-ft} + (0 \text{ acre})(3.95 - 2.35) / 12 \\
 &= 0.14 \text{ acre-ft}
 \end{aligned}$$

Developed Run-off from Site:

$$\begin{aligned}
 WE_C &= \text{Excess Precipitation} = (E_C A_C + E_D A_D) / (A_C + A_D) \text{ (Equation a-5)} \\
 &= ((1.13 \text{ inches} \cdot 0.95 \text{ acre}) + (2.12 \text{ inches} \cdot 0.54 \text{ acre})) / (0.95 + 0.54 \text{ acre}) \\
 &= 1.49 \text{ inches} \\
 V_{360} &= \text{Volume 100 y - 6 hr event} = WE_C \cdot A_C \text{ (Equation a-6)} \\
 &= (1.49 \text{ inches} \cdot 1.49 \text{ acres}) / 12 \\
 &= 0.185 \text{ acre-ft} \\
 V_{10 \text{ DAY}} &= \text{Volume 100 y - 10 day event} \\
 &= V_{360} + A_D(P_{10 \text{ DAY}} - P_{360}) / 12 \text{ (Equation a-9)} \\
 &= 0.185 \text{ acre-ft} + ((0.54 \text{ acre})(3.95 - 2.35) / 12) \\
 &= 0.257 \text{ acre-ft}
 \end{aligned}$$

Increase in Volume:

Difference between volume of 100 y - 6 hr storm undeveloped condition and 100 y - 10 day storm developed condition

$$\begin{aligned}
 V_{10 \text{ DAY}} (\text{developed}) - V_{360} (\text{undeveloped}) &= 0.257 \text{ acre-ft} - 0.14 \text{ acre-ft} \\
 &= (0.117 \text{ acre-ft})(43,560 \text{ ft}^2/\text{acre}) \\
 &= 5096 \text{ ft}^3
 \end{aligned}$$

The pump station site is in FEMA Zone X due to being an area protected by levees from 1% annual flood; therefore, no additional volume increase is required due to displaced volume from site improvements.

Total pond volume required = 5096 ft³

Project Raw Water Pump Station
 Job No. _____
 By _____ Date _____ Chkd. By _____ Date _____

Description Site Drainage

SHEET
3/3

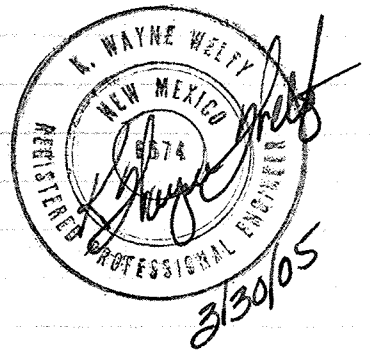
Pond volume supplied:

Contour	Triangular Plane Area	Height	Average Volume
95	$78.6 \times 157.5 / 2 = 6,178 \text{ ft}^2$	0.5	$2,605 \text{ ft}^3$
94.5	$64.7 \times 131.2 / 2 = 4,244$	1.0	3,347
93.5	$49.6 \times 98.9 / 2 = 2,450$	1.0	1,424
92.5	$19.8 \times 40.8 / 2 = 398$		

$$\Sigma \text{Volumes} = 7,377 \text{ ft}^3$$

$$\text{Area Required} = 5,096 \text{ ft}^3 < \text{Area Supplied} = 7,377 \text{ ft}^3$$

OK



Brad Bingham

9/11/05

File

Thanks for meeting this AM. Here
is the form filled out and original
PE Stamp signed calculations w/ supporting
grading plan

Shayne Sheltz