

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

November 8, 2018

David Soule, P.E.
Rio Grande Engineering
P.O. Box 93924
Albuquerque, NM, 87199

RE: 13420 Osage Orange Rd NE
Grading and Drainage Plan
Engineer's Stamp Date: 11/02/18
Hydrology File: E23D031

Dear Mr. Soule:

PO Box 1293

Based upon the information provided in your submittal received 11/05/18, the Grading and Drainage Plan is approved for Building Permit.

Albuquerque

Once the grading is complete, a pad certification will be required prior to release of Building Permit. Please attach a copy of this approved plan in the construction sets for Building Permit processing along with a copy of this letter and the pad certification approval letter.

NM 87103

Prior to approval in support of Permanent Release of Occupancy by Hydrology, Engineer Certification per the DPM checklist will be required and a formal Elevation Certificate needs to be submitted to Hydrology.

www.cabq.gov

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department



City of Albuquerque

Planning Department
Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: 13420 OSAGE ORANGE **Building Permit #:** _____ **Hydrology File #:** _____

DRB#: _____ **EPC#:** _____ **Work Order#:** _____

Legal Description: LOT 53 UNIT 2 OVERLOOK

City Address: 13420 OSAGE ORANGE

Applicant: _____ **Contact:** _____

Address: _____

Phone#: _____ **Fax#:** _____ **E-mail:** _____

Other Contact: RIO GRANDE ENGINEERING

Contact: DAVID SOULE

Address: PO BOX 93924 ALB NM 87199

Phone#: 505.321.9099 **Fax#:** 505.872.0999 **E-mail:** david@riograndeengineering.com

TYPE OF DEVELOPMENT: _____ PLAT ☒ RESIDENCE _____ DRB SITE _____ ADMIN SITE

Check all that Apply:

DEPARTMENT:

☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION

TYPE OF SUBMITTAL:

☐ ENGINEER/ARCHITECT CERTIFICATION
☐ PAD CERTIFICATION
☒ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE REPORT
☐ DRAINAGE MASTER PLAN
☐ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
☐ ELEVATION CERTIFICATE
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ STREET LIGHT LAYOUT
☐ OTHER (SPECIFY) _____
☐ PRE-DESIGN MEETING?

IS THIS A RESUBMITTAL?: _____ Yes ☒ No

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY

☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL

☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☐ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ FLOODPLAIN DEVELOPMENT PERMIT
☐ OTHER (SPECIFY) _____

DATE SUBMITTED: _____ **By:** _____

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

AHYMO.OUT

AHYMO PROGRAM (AHYMO-S4) - Version: S4.01a - Rel: 01a
RUN DATE (MON/DAY/YR) = 10/21/2018
START TIME (HR:MIN:SEC) = 16:29:50 USER NO.=
RioGrandeSingIeA41963517
INPUT FILE = ments and Settings\Owner\Desktop\2018 JOBS\18223-osage orange\pondrout100318.txt

*S AHYMO - DETENTION-ORANGE OSAGE BASIN B POND
*S POND ROUTING
START TIME=0.0 PUNCH CODE=0
RAINFALL TYPE=2
QUARTER=0.0 ONE= 2.23 IN
SIX=2.90 IN DAY= 3.65 IN DT = 0.05 HR

24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
DT = 0.050000 HOURS END TIME = 24.000002 HOURS
0.0000 0.0045 0.0091 0.0140 0.0193 0.0248 0.0310
0.0398 0.0537 0.0687 0.0842 0.1010 0.1181 0.1356
0.1538 0.1722 0.1925 0.2138 0.2367 0.2658 0.2980
0.3412 0.3902 0.4507 0.5314 0.6221 0.7789 1.0225
1.4400 1.7335 1.9649 2.0812 2.1831 2.2564 2.3147
2.3654 2.4026 2.4368 2.4649 2.4887 2.5102 2.5296
2.5478 2.5640 2.5793 2.5942 2.6086 2.6205 2.6271
2.6337 2.6401 2.6461 2.6521 2.6579 2.6636 2.6693
2.6746 2.6799 2.6851 2.6902 2.6952 2.7000 2.7048
2.7095 2.7141 2.7186 2.7230 2.7273 2.7316 2.7358
2.7399 2.7440 2.7481 2.7521 2.7560 2.7599 2.7638
2.7676 2.7713 2.7751 2.7787 2.7824 2.7860 2.7895
2.7931 2.7965 2.8000 2.8034 2.8068 2.8101 2.8134
2.8167 2.8200 2.8232 2.8263 2.8295 2.8326 2.8357
2.8388 2.8418 2.8448 2.8478 2.8508 2.8537 2.8566
2.8595 2.8623 2.8652 2.8680 2.8708 2.8735 2.8763
2.8790 2.8817 2.8844 2.8870 2.8897 2.8923 2.8949
2.8974 2.9000 2.9026 2.9051 2.9077 2.9102 2.9128
2.9153 2.9179 2.9204 2.9229 2.9255 2.9280 2.9305
2.9331 2.9356 2.9381 2.9406 2.9432 2.9457 2.9482
2.9507 2.9532 2.9557 2.9582 2.9607 2.9632 2.9657
2.9682 2.9707 2.9732 2.9757 2.9781 2.9806 2.9831
2.9856 2.9880 2.9905 2.9930 2.9954 2.9979 3.0004
3.0028 3.0053 3.0077 3.0102 3.0126 3.0151 3.0175
3.0199 3.0224 3.0248 3.0272 3.0297 3.0321 3.0345
3.0369 3.0393 3.0418 3.0442 3.0466 3.0490 3.0514
3.0538 3.0562 3.0586 3.0610 3.0634 3.0657 3.0681
3.0705 3.0729 3.0753 3.0776 3.0800 3.0824 3.0847
3.0871 3.0895 3.0918 3.0942 3.0965 3.0989 3.1012
3.1036 3.1059 3.1083 3.1106 3.1129 3.1153 3.1176
3.1199 3.1222 3.1246 3.1269 3.1292 3.1315 3.1338
3.1361 3.1384 3.1407 3.1430 3.1453 3.1476 3.1499
3.1522 3.1545 3.1568 3.1591 3.1613 3.1636 3.1659
3.1682 3.1704 3.1727 3.1749 3.1772 3.1795 3.1817
3.1840 3.1862 3.1885 3.1907 3.1930 3.1952 3.1974
3.1997 3.2019 3.2041 3.2063 3.2086 3.2108 3.2130
3.2152 3.2174 3.2196 3.2218 3.2240 3.2263 3.2284
3.2306 3.2328 3.2350 3.2372 3.2394 3.2416 3.2438
3.2459 3.2481 3.2503 3.2525 3.2546 3.2568 3.2589
3.2611 3.2633 3.2654 3.2676 3.2697 3.2719 3.2740
3.2761 3.2783 3.2804 3.2825 3.2847 3.2868 3.2889

COMPUTE NM HYD ID=1 HYD NO=101 DA=-.000213 SQ MI
PER A=10 PER B=26 PER C=24 PER D=40
TP=-.160 MASSRAIN=-1
K = 0.087200HR TP = 0.160000HR K/TP RATIO = 0.545000 SHAPE
CONSTANT, N = 7.106428
UNIT PEAK = 0.28024 CFS UNIT VOLUME = 0.9569 B = 526.28
P60 = 2.2300
AREA = 0.000085 SQ MI IA = 0.10000 INCHES INF = 0.04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000
K = 0.154781HR TP = 0.160000HR K/TP RATIO = 0.967379 SHAPE
CONSTANT, N = 3.651494
UNIT PEAK = 0.26457 CFS UNIT VOLUME = 0.9482 B = 331.23
P60 = 2.2300
AREA = 0.000128 SQ MI IA = 0.46500 INCHES INF = 1.15200
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000
PRINT HYD ID=1 CODE=3
PARTIAL HYDROGRAPH 101.00
TIME TIME FLOW TIME TIME FLOW TIME FLOW
HRS HRS CFS HRS HRS CFS HRS CFS
14.850 0.000 0.0 19.800 4.950 0.0 9.900 0.0
15.000 0.150 0.0 19.950 5.100 0.0 10.050 0.0

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AHYMO.OUT

15.150 0.300 0.0 5.250 0.0 10.200 0.0
0.450 0.0 20.100 0.0 10.350 0.0
15.300 0.600 0.0 20.250 5.550 0.0 10.500 0.0
15.450 0.0 0.0 20.400 0.0 10.650 0.0
0.750 0.0 20.550 5.700 0.0 10.800 0.0
15.600 0.900 0.0 20.550 5.850 0.0 10.800 0.0
15.750 0.0 0.0 20.700 0.0 10.950 0.0
1.050 0.0 20.850 6.000 0.0 10.950 0.0
15.900 1.200 0.0 21.000 6.150 0.0 11.100 0.0
16.050 0.0 0.0 21.000 0.0 11.250 0.0
1.350 0.1 21.150 6.300 0.0 11.250 0.0
16.200 1.500 0.5 21.150 6.450 0.0 11.400 0.0
16.350 0.0 0.4 21.300 0.0 11.550 0.0
1.650 0.0 21.450 6.600 0.0 11.700 0.0
16.500 1.800 0.2 21.450 6.750 0.0 11.700 0.0
16.650 0.0 0.1 21.600 6.900 0.0 11.850 0.0
1.950 0.1 21.750 7.200 0.0 12.150 0.0
16.800 2.100 0.0 22.050 7.350 0.0 12.300 0.0
16.950 0.0 0.0 22.200 0.0 12.450 0.0
2.250 0.0 22.350 7.500 0.0 12.600 0.0
17.100 2.400 0.0 22.500 7.650 0.0 12.750 0.0
17.250 2.600 0.0 22.650 7.800 0.0 12.900 0.0
17.400 2.750 0.0 22.800 7.950 0.0 13.050 0.0
17.550 2.850 0.0 22.950 8.100 0.0 13.200 0.0
17.700 3.000 0.0 23.100 8.250 0.0 13.350 0.0
17.850 3.150 0.0 23.250 8.400 0.0 13.500 0.0
18.000 3.300 0.0 23.400 8.550 0.0 13.650 0.0
18.150 3.450 0.0 23.550 8.700 0.0 13.800 0.0
18.300 3.600 0.0 23.700 8.850 0.0 13.950 0.0
18.450 3.750 0.0 23.850 9.000 0.0 14.100 0.0
18.600 3.900 0.0 24.000 9.150 0.0 14.250 0.0
18.750 4.050 0.0 24.150 9.300 0.0 14.400 0.0
18.900 4.200 0.0 9.450 0.0 14.550 0.0
19.050 4.350 0.0 9.600 0.0 14.700 0.0
19.200 4.500 0.0 9.750 0.0
19.350 4.650 0.0
19.500 4.800 0.0
19.650 0.0

RUNOFF VOLUME = 2.09359 INCHES = 0.0238 ACRE-FEET
PEAK DISCHARGE RATE = 0.54 CFS AT 1.550 HOURS BASIN AREA = 0.0002 SQ. MI.

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AHYMO.OUT

* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR
ROUTE RESERVOIR ID=2 HYD NO=102 INFLOW=1 CODE=3
OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)
0.00 0.004 89.50
0.12 0.008 89.50
0.24 0.017 90.75
* * * * *
TIME INFLOW ELEV VOLUME OUTFLOW
(HRS) (CFS) (FEET) (AC-FT) (CFS)
0.00 0.00 89.50 0.004 0.00
0.15 0.00 89.50 0.004 0.00
0.30 0.00 89.50 0.004 0.00
0.45 0.00 89.50 0.004 0.00
0.60 0.00 89.50 0.004 0.00
0.75 0.01 89.51 0.004 0.00
0.90 0.02 89.52 0.004 0.01
1.05 0.02 89.54 0.004 0.01
1.20 0.05 89.57 0.005 0.02
1.35 0.14 89.66 0.005 0.04
1.50 0.54 90.03 0.008 0.12
1.65 0.41 90.38 0.013 0.18
1.80 0.19 90.49 0.014 0.20
1.95 0.10 90.43 0.013 0.19
2.10 0.05 90.32 0.012 0.17
2.25 0.04 90.20 0.010 0.15
2.40 0.02 90.08 0.009 0.13
2.55 0.01 89.95 0.008 0.11
2.70 0.01 89.82 0.007 0.08
2.85 0.00 89.73 0.006 0.05
3.00 0.00 89.66 0.005 0.04
3.15 0.00 89.62 0.005 0.03
3.30 0.00 89.58 0.005 0.02
3.45 0.00 89.56 0.004 0.01
3.60 0.00 89.55 0.004 0.01
3.75 0.00 89.54 0.004 0.01
3.90 0.00 89.53 0.004 0.01
4.05 0.00 89.52 0.004 0.01
4.20 0.00 89.52 0.004 0.00
PEAK DISCHARGE = 0.198 CFS - PEAK OCCURS AT HOUR 1.80
MAXIMUM WATER SURFACE ELEVATION = 90.487
MAXIMUM STORAGE = 0.0138 AC-FT INCREMENTAL TIME= 0.050000HRS
FINISH
NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:29:50

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MINIMUM SWALE CAPACITY

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
LS SWALE	2	0	0.5	0.50	2.24	0.2236068	2	1.11	0.54	1.08

Manning's Equation:
Q = 1.49/n * A * R^(2/3) * S^(1/2)
A = Area
R = D/4
S = Slope
n = 0.035

OVERFLOW

Weir Equation:
 $Q=CLH^{3/2}$
WEST OPENING CAPACITY
Q= .54 cfs REQUIRED
C = 2.95
H = 0.67 ft
L = Length of weir
Q = 2.95*5.*((.5)^(3 / 2)) =
Q PROVIDED=5.21 CFS

VOLUME CALCULATIONS

POND A

ACTUAL ELEV.	DEPTH (FT)	AREA SF	VOLUME PER UNIT	VOLUME CUMULATIVE	VOLUME AC-FT	Q (CFS)
6191	0	5	5	0	0.000	
6192.25	1.25	189.00	121.25	121.25	0.003	

POND B

ACTUAL ELEV.	DEPTH (FT)	AREA SF	VOLUME PER UNIT	VOLUME CUMULATIVE	VOLUME AC-FT	Q (CFS)
6188.5	0	98	98	0	0.000	
6189.50	0.00	242.00	170	170	0.004	
6189.75	0.00	330.00	71.5000	241.5	0.006	0.00
6190.00	0.25	421.00	93.8750	335.375	0.008	0.12
6190.75	1.00	702.00	421.1250	756.5	0.017	0.24

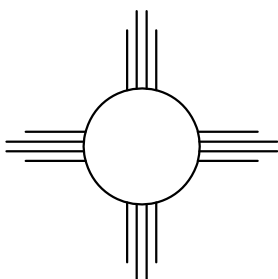
OUTLET

ACTUAL ELEV.	DEPTH (FT)	AREA SF	VOLUME PER UNIT	VOLUME CUMULATIVE	VOLUME AC-FT	Q (CFS)
6188.5	0	98	98	0	0.000	
6189.50	0.00	242.00	170	170	0.004	
6189.75	0.00	330.00	71.5000	241.5	0.006	0.00
6190.00	0.25	421.00	93.8750	335.375	0.008	0.12
6190.75	1.00	702.00	421.1250	756.5	0.017	0.24

Orifice Equation
Q = CA SQRT(2gH)
C = 0.6
Diameter (in) 3
Area (ft^2)= 0.049087385
H = 32.2
H (ft) = Depth of water above center of orifice
Q (CFS)= Flow

13420 OSAGE ORANGE

HYDRAULIC CALCULATION SHEET



Rio Grande Engineering
1606 CENTRAL AVENUE SE
SUITE 201
ALBUQUERQUE, NM 87106
(505) 872-0689

DAVID SOULE
P.E. #14522

DRAWN BY WCWJ
DATE 10-02-18
218145-LAYOUT-10-02-18
SHEET # 2 OF 2
JOB # 21740