MEMO

Item 15

To: Board of Directors

From: Bradley L. Bingham, P.E., Drainage Engineer BLB

Date: November 17, 2011

Re: Proposed West I-40 DMP Update 2011

This memo is broken into three parts in order to provide a historical overview. Shifts more water from AMAFCA to the City across the NPS site.

West I-40 DMP 2000

At the June 29, 2000 AMAFCA Board meeting, the Board passed Resolution 2000-8 which adopted the West I-40 Drainage Management Plan (DMP), which modified the Western Albuquerque DMP as it pertained to the Petroglyph National Monument. The West I-40 DMP had three main, distinct options to manage and convey runoff from the upper watershed above the escarpment down into the Ladera/West I-40 systems. The Resolution approved Option 6A, which essentially became a hybrid of the other two options. This allowed time for Westland and the National Park Service (the two major land holders in the watershed) to agree to the conveyance route of the upper watershed and provided some flexibility in the management of the lower portion of the basin. Regardless of which option was selected, certain trunk facilities were required in any case. These include:

- Building the West I-40 Channel from Paseo del Volcan to the existing West Bluff Outfall with in-line detention ponds at Unser and 98th
- Building the East Amole Dam,
- Building the West Amole Dam and outfall into the East Amole Dam,
- Building Dam 5 Arroyo,
- Upsizing Ladera Dams 1, 3, 5,
- Building the Parkway Storm Drain,

Many of these facilities are constructed today.

One option – Option 2D (preferred by the National Park Service) had the flows from the upper watershed diverted *around* the Monument. This would be accomplished by routing the runoff into four additional dams (PdV, A2, C, and D5) and into the Dam 5 Arroyo. Also required would be upsizing Ladera Dam 5 (31 to 38 ac-ft) and building the Dam 5 Diversion (72" RCP) from Dam 5 to West I-40 Channel.

A second option – Option 3C.1 (preferred by Westland) would convey detained flows *through* the Monument into the Mirehaven Arroyo, which drains into Ladera Dam 12. This option would require the same four dams and building the PdV Diversion pipe (60"-

84") through the monument. This would require 7-10 foot cuts plus the establishment of a maintenance road. Also required would be the upsizing of Ladera Dam 12

The third option – Option 6A allowed the lower portion of the watershed to develop and still meet the requirements of the Amole Westgate and Amole Hubbell DMP's. Key additional facilities required under this option include building the Dam 5 Diversion (54" RCP), enlarging Ladera Dam 11 and arroyo stabilization in the Atrisco Terrace Open Space.

West I-40 DMP Update (2006)
At the November 16, 2006 AMAFCA Board meeting, the Board passed Resolution 2006-9 which accepted the West I-40 DMP Update. The Update became necessary when NMDOT GRIP projects in the West I-40 corridor were programmed for construction. Significant proposed changes to storage elements of the previous study included:

- Diverting some East Amole basins through a new EA.11 Dam into Ladera Dam 0, which will reduce detention volumes and storm drain sizes in the West I-40 system,
- Relocating the proposed location of the East Amole Dam eastward and making it a Surge Pond,
- Upsizing Ladera Dam 0,
- Revising the 98th Street Dam to be a Surge Pond,
- Adding a proposed PdV Interchange Dam,

This revision of the DMP did not make a recommendation concerning the selection of either Option 2D or 3C.1 nor did construction of the NMDOT GRIP projects preclude either option to be constructed in the future.

West I-40 DMP Update (2011)
This latest West I-40 DMP Update (2011) mainly deals with the basins upland of Ladera Dams 5 and 9. The revision analyzes four different options to manage and convey the drainage from the upper basins. It also does not make any recommendation as to Options 2D or 3C.1 and continues to assume a worst-case scenario, that being the diversion of flows *around* the Monument and into the Dam 5. Facilities proposed in the previous versions that will continue to be part of the drainage system include the:

- PdV, A2, C and D5 Dams,
- PdV Diversion Storm Drains,
- EA.11 Dam with outfall to Ladera Dam 0,
- Expansion of Ladera Dams 0 and 1,
- Dam 5 Arroyo,
- Dam 5 Diversion to the West I-40 system,

There are certain facilities common to all four options in this revision. They include:
- The addition of Dam 5S to the system,
- The addition of the Dam 9 Diversion arroyo to Dam 5S,

- Replacing a portion of the Dam 5 Arroyo with a Dam 5S Storm Drain between Dam 5S to Ladera Dam 5.

Option 1 looked at optimizing the existing Ladera system and eliminating the proposed Dam 5 Diversion. This would mainly be accomplished by increasing the proposed Dam D5 (102 to 350 ac-ft) and relocating it to the bottom of the escarpment.

Option 2 analyzed keeping the original Dam D5 size (102 ac-ft), but revised location, and included upsizing Ladera Dams 1-5 (to < 50 ac-ft each). The Dam 5 Diversion would be necessary in this option.

Option 3 is very similar to Option 2 but without expansion of Ladera Dams 2-5. Ladera Dam 1 would still need to be upsized (49.9 ac-ft) and a bigger Dam 5 Diversion storm drain would still be required.

Option 4 optimizes Option 3 even further by adding the Storm Cloud Storm Drain Diversion to the system. This is intended to divert flows out of Dam 5S *back* to the Storm Cloud Storm Drain, thereby utilizing capacity already provided for in the storm drain and Ladera Dam 9, and also eliminating the need to upsize Dam 5.

BHI representatives will brief the Board on the latest Update and answer any questions the Board may have. Staff is currently reviewing this Update and feels that Option 4 is the best option since it optimizes the existing system capacity, limits the requirement for huge infrastructure or detention reservoirs, and preserves the flexibility to select the appropriate conveyance option in the future. A Final Update and Resolution adopting this latest revision will be presented to the Board at a future meeting.

For Information Only

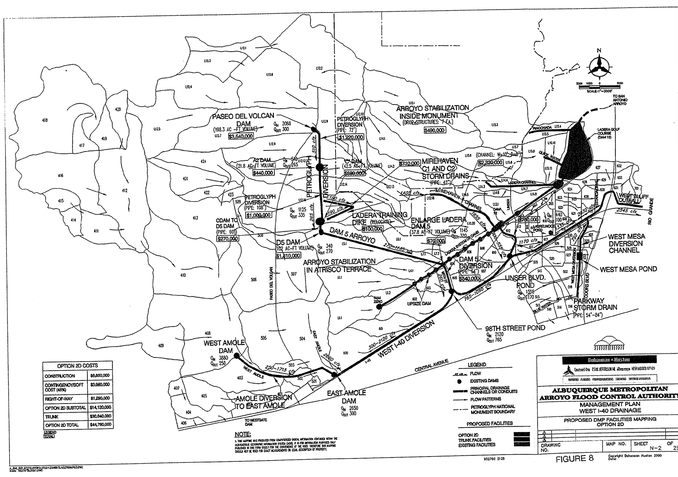
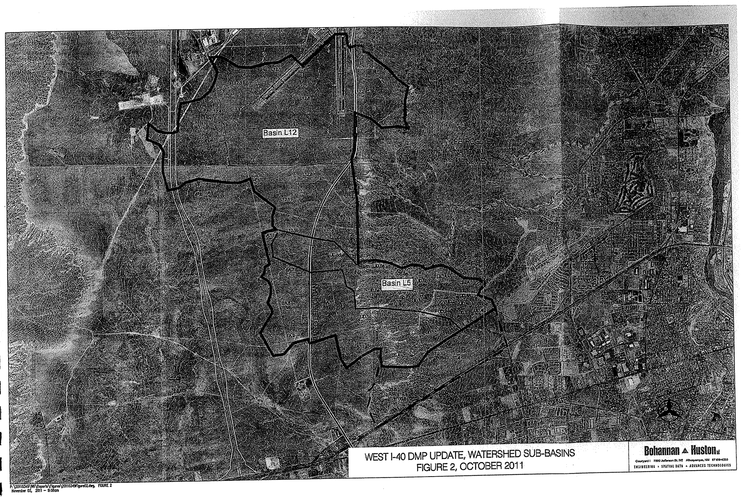

PASEO DEL VOLCAN DAM
ARROYO STABILIZATION INSIDE MONUMENT
PETROGLYPH DIVERSION
MIRIDAVEN C1 AND C2 STORM DRAINS
LADERA DRAINING DIKE
ENLARGE LADERA DAM 5
DAM 5 ARROYO
D5 DAM
ARROYO STABILIZATION IN ATRISCO TERRACE
DAM 5 DIVERSION
UNSER BLVD. POND
WEST MESA DIVERSION CHANNEL
WEST MESA POND
PARKWAY STORM DRAIN
98TH STREET POND
WEST AMOLE DAM
AMOLE DIVERSION TO EAST AMOLE
EAST AMOLE DAM
WEST I-40 DIVERSION
CENTRAL AVENUE
LEGEND
FLOW
EXISTING DAMS
PROPOSED FACILITIES
OPTION 2D
TRUNK FACILITIES
EXISTING FACILITIES
NOTE:
OPTION 2D COSTS
CONSTRUCTION
CONTINGENCY/SOFT COST (40%)
RIGHT-OF-WAY
OPTION 2D SUBTOTAL
TRUNK
OPTION 2D TOTAL
ALBUQUERQUE METROPOLITAN
ARROYO FLOOD CONTROL AUTHORITY
MANAGEMENT PLAN
WEST I-40 DRAINAGE
PROPOSED DAP FACILITIES MAPPING
OPTION 2D
DRAWING NO.
MAP NO.
SHEET
OF
N-2
29

FIGURE 8



WEST I-40 DMP UPDATE, WATERSHED SUB-BASINS
FIGURE 2, OCTOBER 2011

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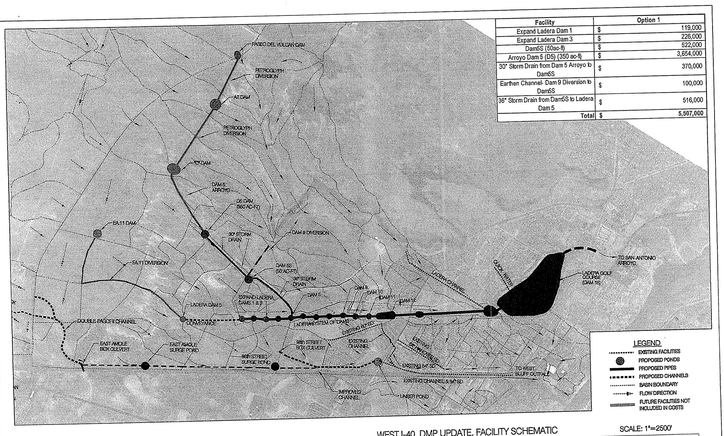

Facility	Option 1
Expand Ladera Dam 1	$ 119,000
Expand Ladera Dam 3	$ 226,000
DamE5 (50ac-ft)	$ 522,000
Arroyo Dam 5 (DS) (350 ac-ft	$ 3,654,000
30" Storm Drain from Dam 5 Arroyo to DamE5	$ 370,000
Earthen Channel- Dam D Diversion to DamE5	$ 100,000
36" Storm Drain from DamE5 to Ladera Dam 5	$ 516,000
Total	$ 5,507,000

WEST I-40 DMP UPDATE, FACILITY SCHEMATIC
OPTION 1

SCALE: 1"=2500'

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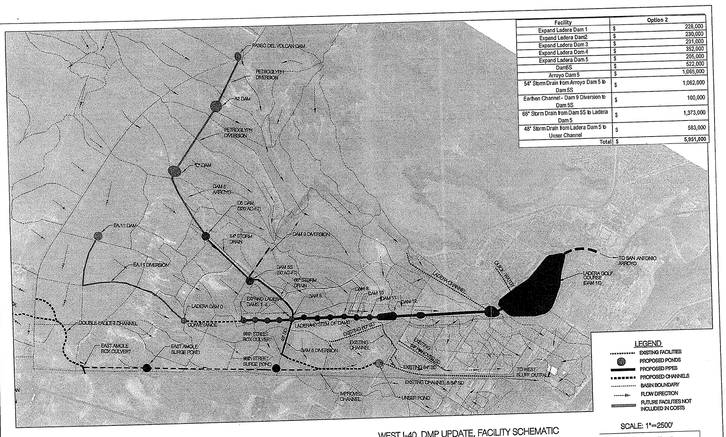
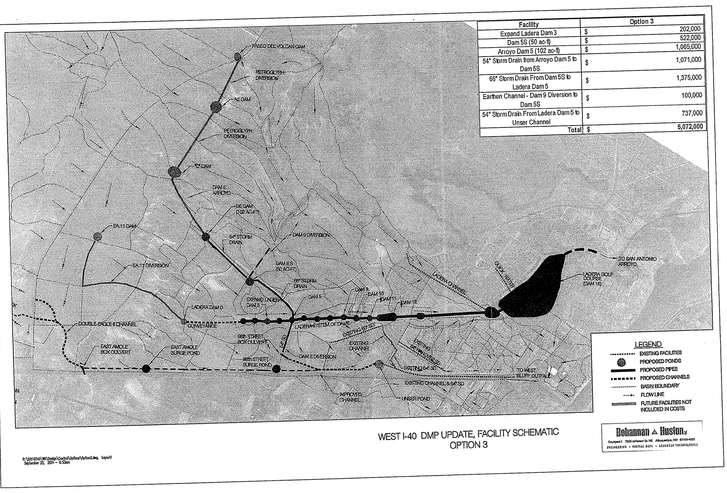

PASEO DEL VOLCAN DAM
PETROLEUM DIVERSION
DAM
PETROLEUM DIVERSION
TC DAM
DAM 7 APPROACH
DS DAM (SAN ACACIO)
SAN 11 DAM
SAN 11 DIVERSION
SAN 10 DIVERSION
DAM 8
DAM 9
DAM 10
DAM 11
DAM 12
DAM 13
DAM 14
DAM 15
DAM 16
DAM 17
DAM 18
DAM 19
DAM 20
DAM 21
DAM 22
DAM 23
DAM 24
DAM 25
DAM 26
DAM 27
DAM

Facility	Option 3
Expand Ladera Dam 3	$ 202,000
Dam 5S (50 ac-ft)	$ 522,000
Arroyo Dam 5 (102 ac-ft)	$ 1,065,000
54" Storm Drain from Arroyo Dam 5 to Dam 5S	$ 1,071,000
66" Storm Drain From Dam 5S to Ladera Dam 5	$ 1,375,000
Earthen Channel - Dam 9 Diversion to Dam 5S	$ 100,000
54" Storm Drain From Ladera Dam 5 to Unser Channel	$ 737,000
Total	$ 5,072,000



WEST I-40 DMP UPDATE, FACILITY SCHEMATIC
OPTION 3

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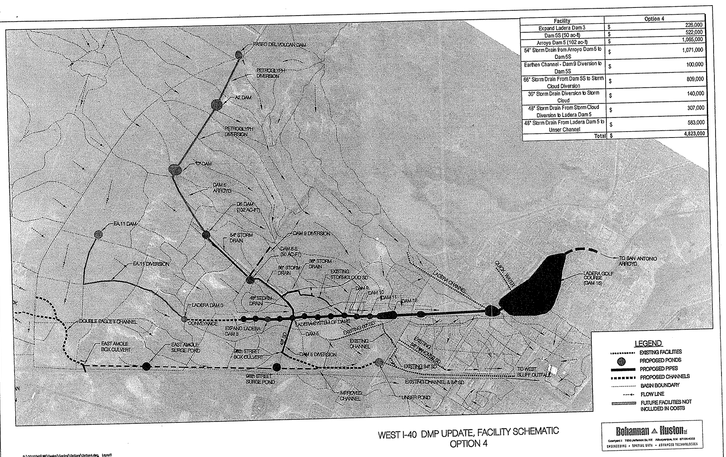

Facility	Option 4
Expand Ladera Dam 3	$ 235,000
Dam 0/5 (50 ac-ft)	$ 122,000
Arroyo Dam 6 (102 ac-ft)	$ 1,560,000
84" Storm Drain from Arroyo Dam 6 to Dam 0/5	$ 1,071,000
Earthen Channel - Dam 0 Diversion to Dam 0/5	$ 100,000
66" Storm Drain From Dam 0/5 to Storm Cloud Diversion	$ 809,000
30" Storm Drain Diversion to Storm Cloud	$ 140,000
48" Storm Drain From Storm Cloud Diversion to Ladera Dam 5	$ 307,000
48" Storm Drain From Ladera Dam 5 to Unser Channel	$ 583,000
Total:	$ 4,833,000

LEGEND

- EXISTING FACILITIES
- PROPOSED PONDS
- PROPOSED PIPES
- PROPOSED CHANNELS
- BASIN BOUNDARY
- FLOW LINE
- FUTURE FACILITIES NOT INCLUDED IN COSTS

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WEST I-40 DMP UPDATE, FACILITY SCHEMATIC
OPTION 4

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