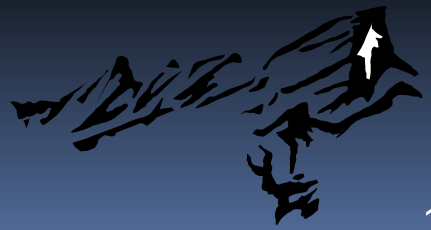
South Boulder Creek Major Drainageway Flood Mitigation Planning Study

City Council

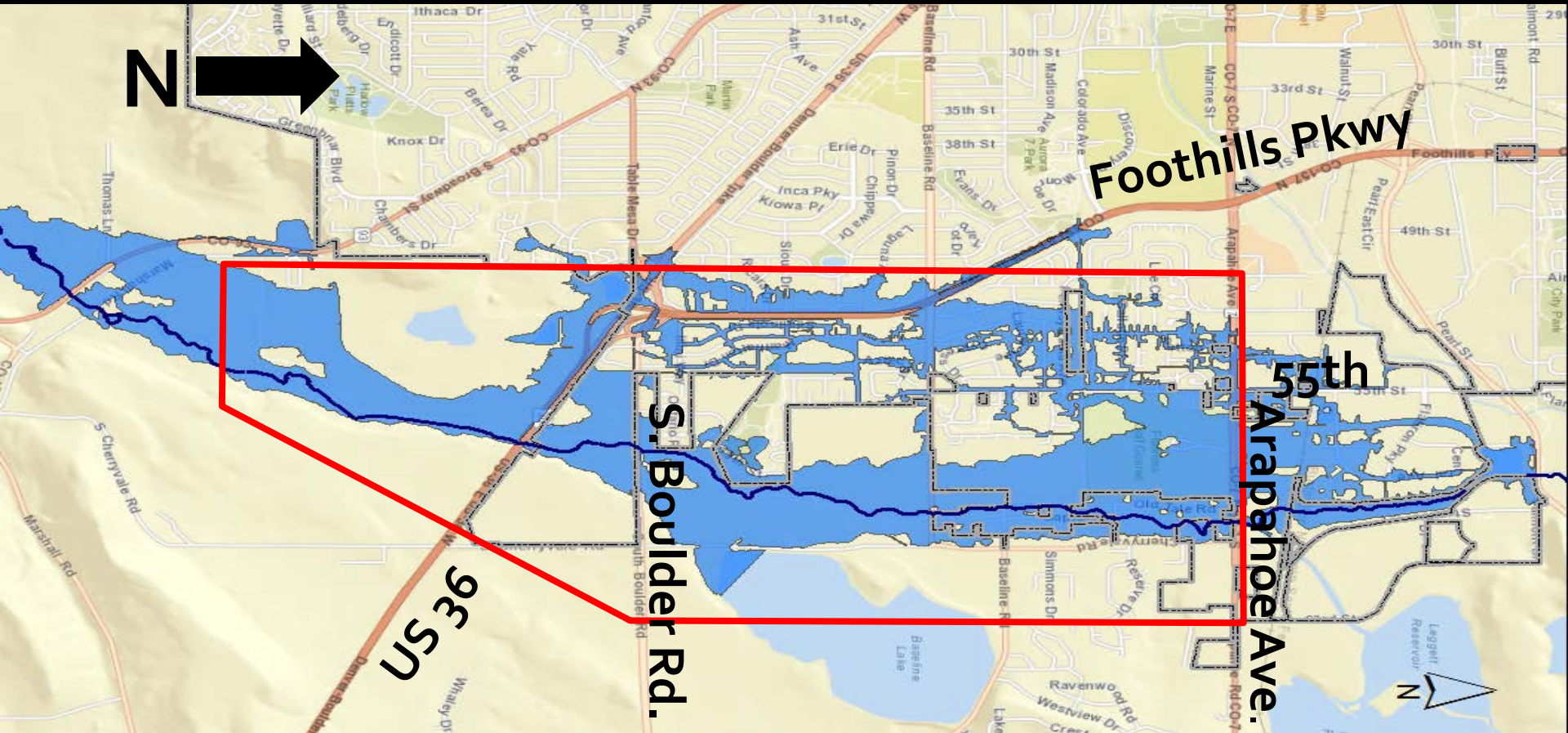
Aug. 4, 2015



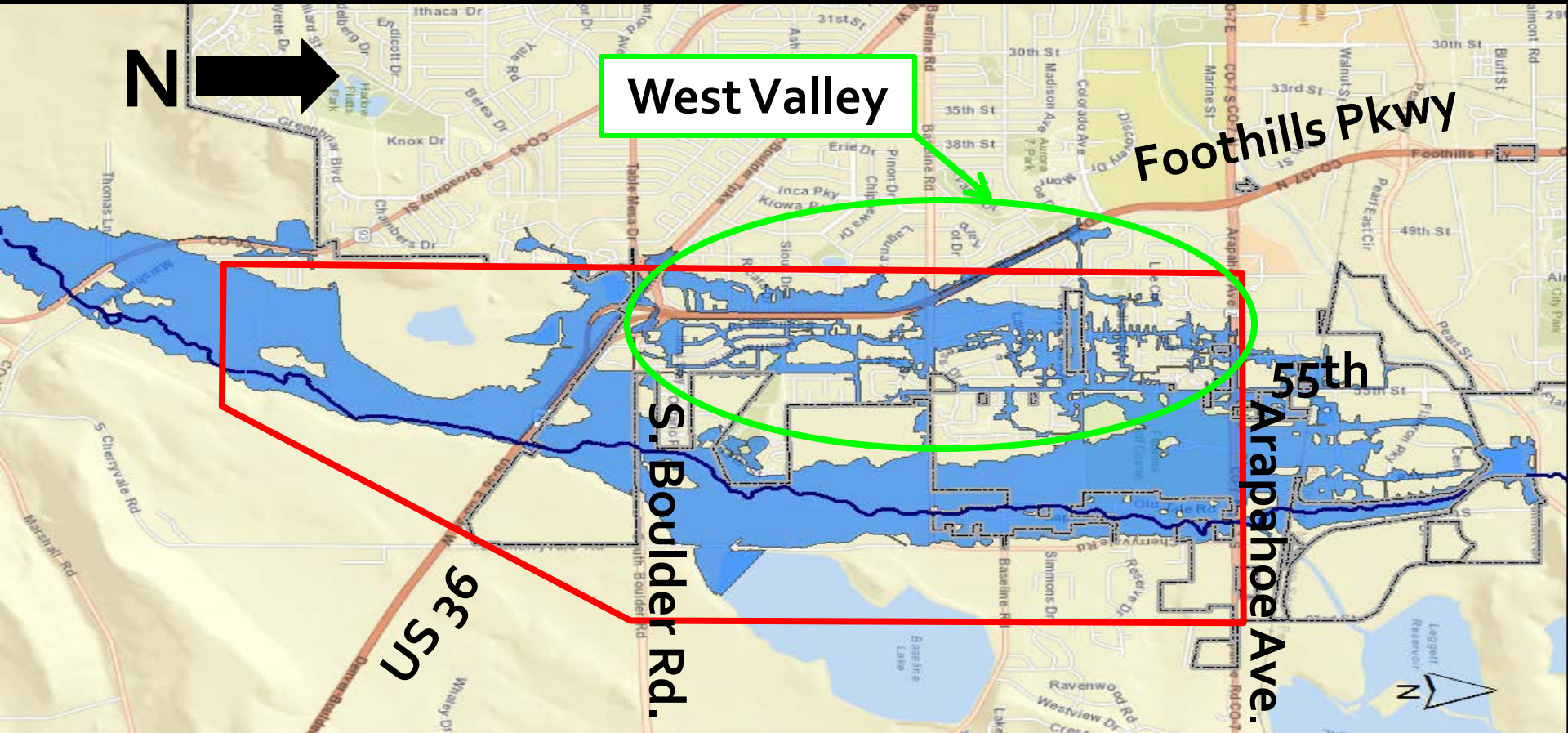
South Boulder Creek Agenda

- Background / History
- US 36 Detention Options (Phase I)
- Phases II and III Summary
- Next Steps
- Questions and Recommended Motion

Current Study/Background



Current Study/Background



2013 Flood Event

2013 Flood Event

Current Floodplain

September 2013 Flood

SOUTH BOULDER CREEK MAJOR DRAINAGEWAY PLAN– *ALTERNATIVES ANALYSIS REPORT*

9

Prepared for:

CITY OF BOULDER

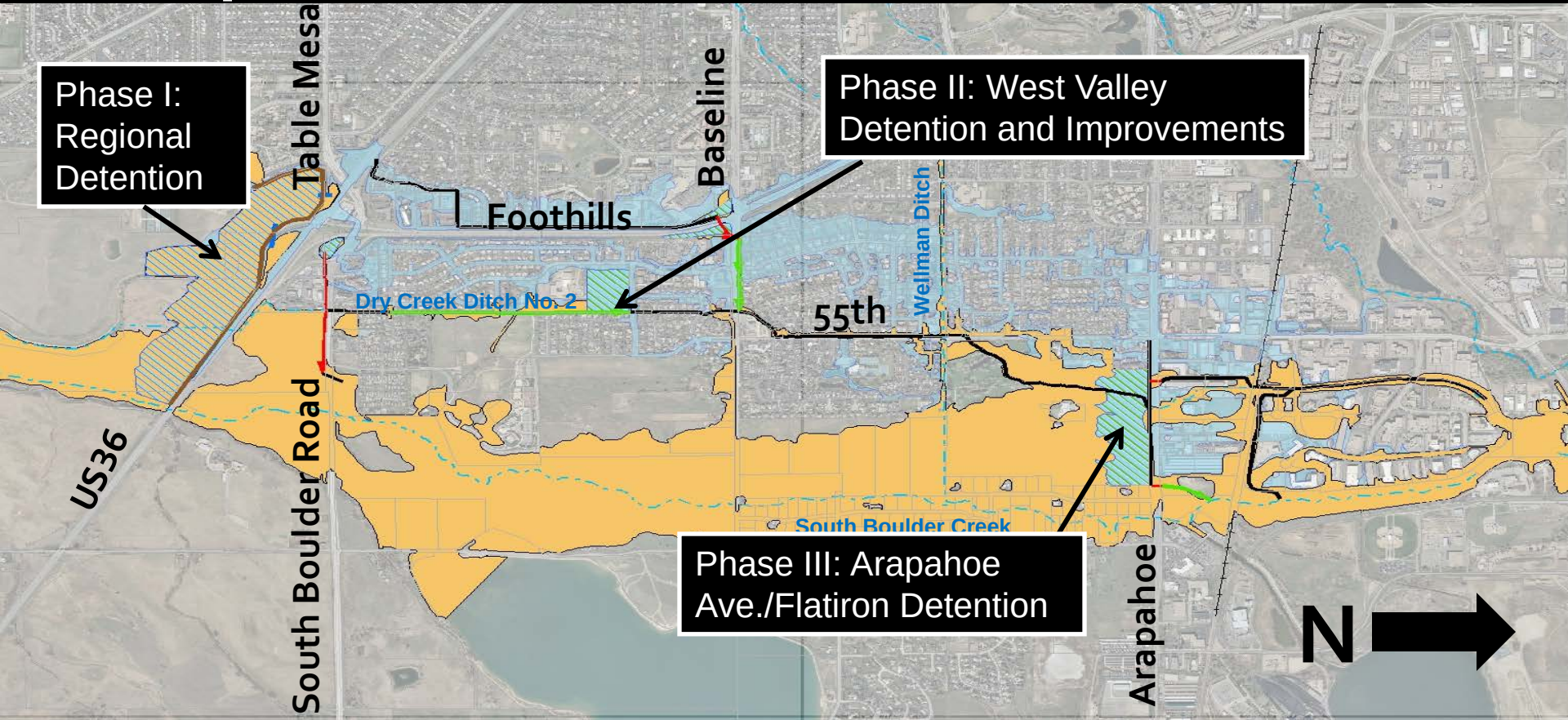
URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

July 2014

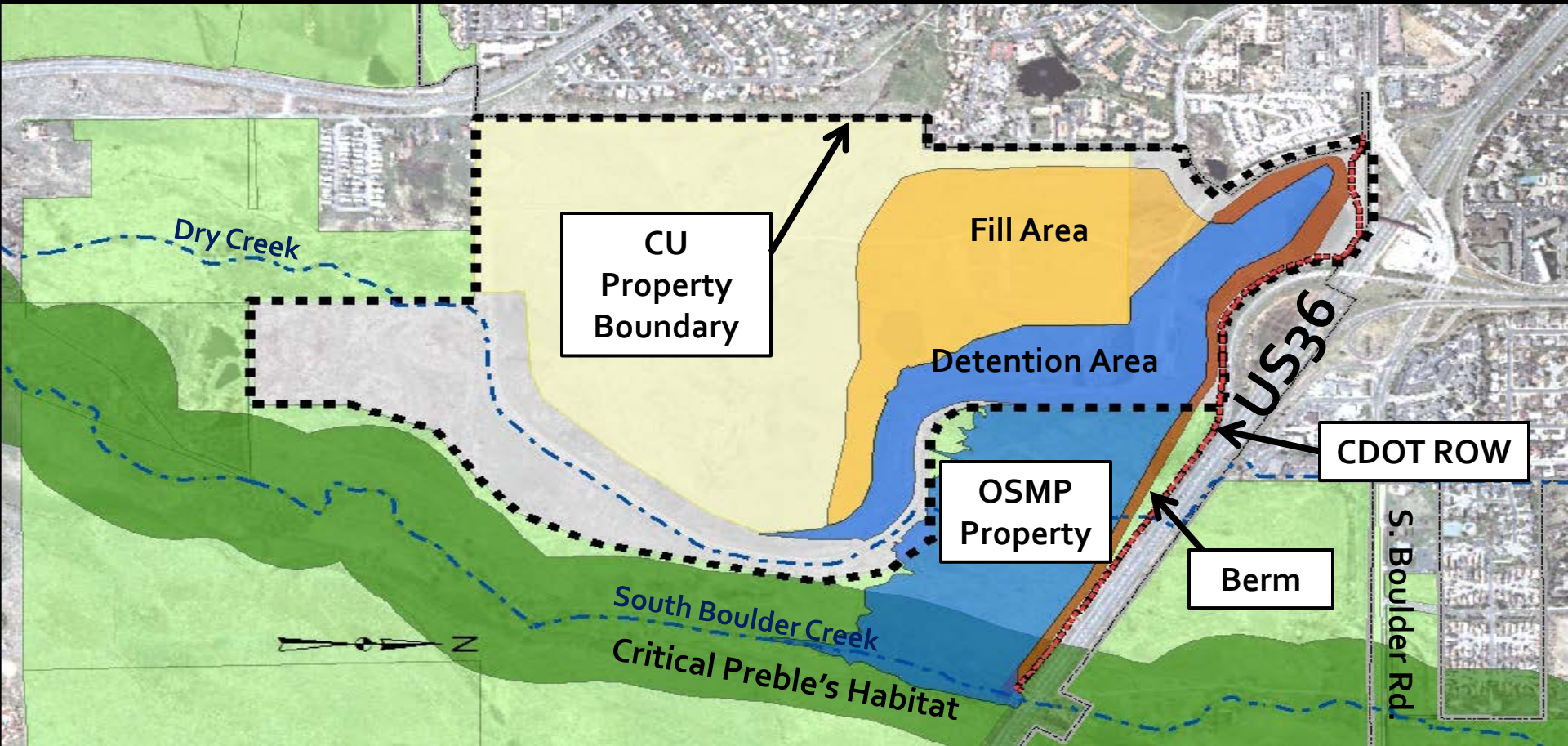
CH2MHILL

9191 South Jamaica Street
Englewood, CO 80112-5946
Phone (303) 771-0900
Fax (720) 286-9250

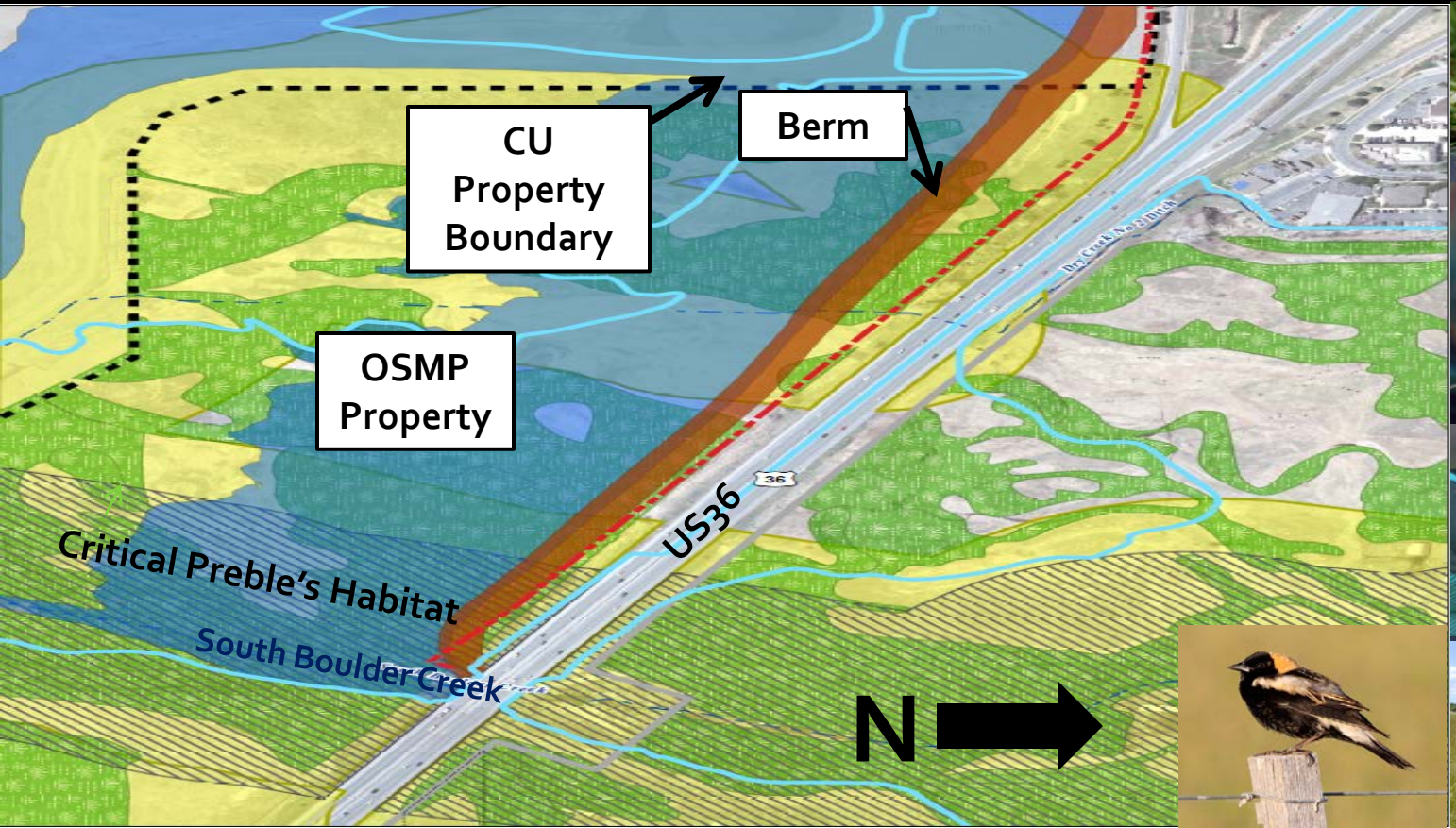
2014 Recommended Plan



2014 US 36 Detention Alternative



2014 Environmental Impacts



Seven Options

	Single Berm	Dual Berm	Excavation	Fill
Option A	✓			✓
Option B	✓		✓	
Option C	✓		✓	✓
Option D	✓		✓	✓
Option E		✓		
Option F		✓	✓	
Option G		✓	✓	✓

Summary of Options

Option	Total Impacts to CU Parcel (acres)	Total Berm impacts to OSMP (acres)	Total Detention OSMP (acres)	Maximum Berm Height (feet)	Est. Cost ($millions)	Est. Benefit to Cost Ratio
A – 2014 Option	56	5	35	34.5	24.0	1.1
B - Single Berm with Excavation	90	2	5	27.5	21.5	1.2
C – Single Berm with Excavation and Fill	80	3	17.5	30.5	22.5	1.2
D – Single Berm CDOT ROW	79	0	19	29.5	22.5	1.2
E- Dual Berm no Excavation	142	1	3.5	26.5	26	1
F – Dual Berm with Excavation	100	2	5	27.5	31	0.9
G – Dual Berm with Excavation and Fill	99	0.5	8.5	28.5	34.5	0.8

Summary of Options

Option	Total Impacts to CU Parcel (acres)	Total Berm impacts to OSMP (acres)	Total Detention OSMP (acres)	Maximum Berm Height (feet)	Est. Cost ($millions)	Est. Benefit to Cost Ratio
A – 2014 Option	56	5	35	34.5	24.0	1.1
B - Single Berm with Excavation	90	2	5	27.5	21.5	1.2
C – Single Berm with Excavation and Fill	80	3	17.5	30.5	22.5	1.2
D – Single Berm CDOT ROW	79	0	19	29.5	22.5	1.2
E- Dual Berm no Excavation	142	1	3.5	26.5	26	1
F – Dual Berm with Excavation	100	2	5	27.5	31	0.9
G – Dual Berm with Excavation and Fill	99	0.5	8.5	28.5	34.5	0.8

Summary of Options

Option	Total Impacts to CU Parcel (acres)	Total Berm impacts to OSMP (acres)	Total Detention OSMP (acres)	Maximum Berm Height (feet)	Est. Cost ($millions)	Est. Benefit to Cost Ratio
A – 2014 Option	56	5	35	34.5	24.0	1.1
B - Single Berm with Excavation	90	2	5	27.5	21.5	1.2
C – Single Berm with Excavation and Fill	80	3	17.5	30.5	22.5	1.2
D – Single Berm CDOT ROW	79	0	19	29.5	22.5	1.2
E- Dual Berm no Excavation	142	1	3.5	26.5	26	1
F – Dual Berm with Excavation	100	2	5	27.5	31	0.9
G – Dual Berm with Excavation and Fill	99	0.5	8.5	28.5	34.5	0.8

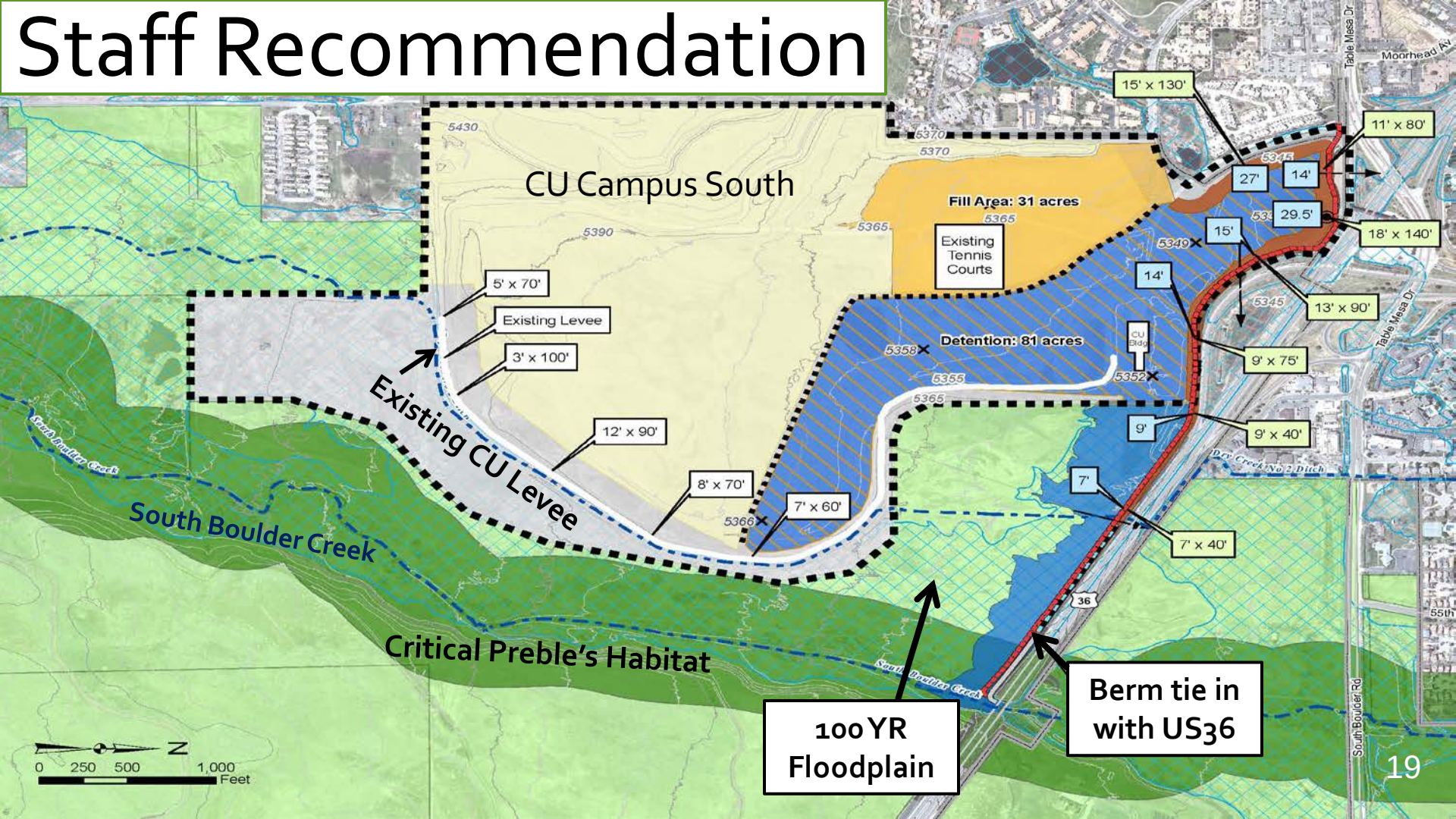
Summary of Options

Option	Total Impacts to CU Parcel (acres)	Total Berm impacts to OSMP (acres)	Total Detention OSMP (acres)	Maximum Berm Height (feet)	Est. Cost ($millions)	Est. Benefit to Cost Ratio
A – 2014 Option	56	5	35	34.5	24.0	1.1
B - Single Berm with Excavation	90	2	5	27.5	21.5	1.2
C – Single Berm with Excavation and Fill	80	3	17.5	30.5	22.5	1.2
D – Single Berm CDOT ROW	79	0	19	29.5	22.5	1.2
E- Dual Berm no Excavation	142	1	3.5	26.5	26	1
F – Dual Berm with Excavation	100	2	5	27.5	31	0.9
G – Dual Berm with Excavation and Fill	99	0.5	8.5	28.5	34.5	0.8

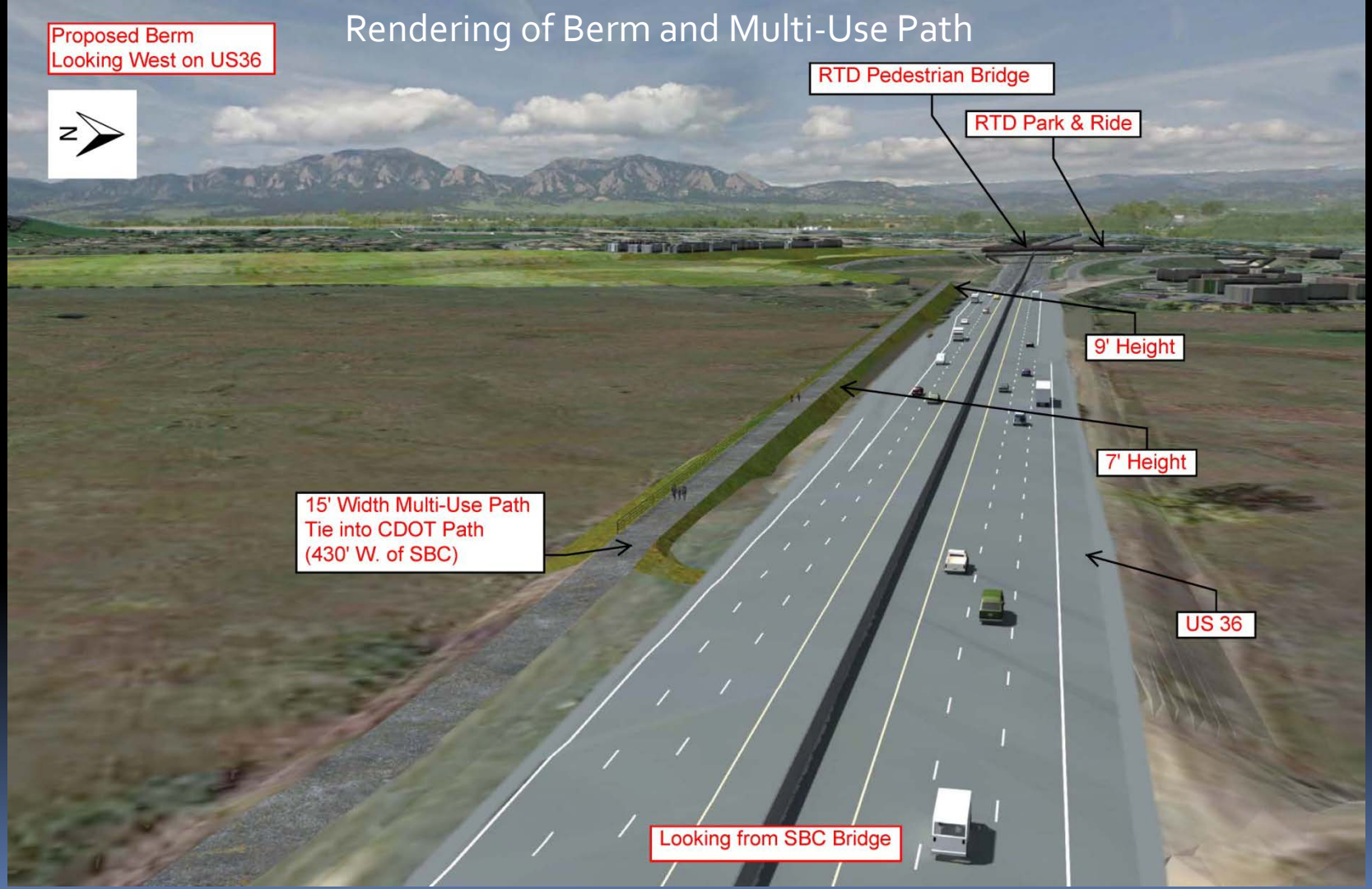
Summary of Options

Option	Total Impacts to CU Parcel (acres)	Total Berm impacts to OSMP (acres)	Total Detention OSMP (acres)	Maximum Berm Height (feet)	Est. Cost ($millions)	Est. Benefit to Cost Ratio
A – 2014 Option	56	5	35	34.5	24.0	1.1
B - Single Berm with Excavation	90	2	5	27.5	21.5	1.2
C – Single Berm with Excavation and Fill	80	3	17.5	30.5	22.5	1.2
D – Single Berm CDOT ROW	79	0	19	29.5	22.5	1.2
E- Dual Berm no Excavation	142	1	3.5	26.5	26	1
F – Dual Berm with Excavation	100	2	5	27.5	31	0.9
G – Dual Berm with Excavation and Fill	99	0.5	8.5	28.5	34.5	0.8

Staff Recommendation



Rendering of Berm and Multi-Use Path



Rendering of Existing Conditions
Proposed Detention site

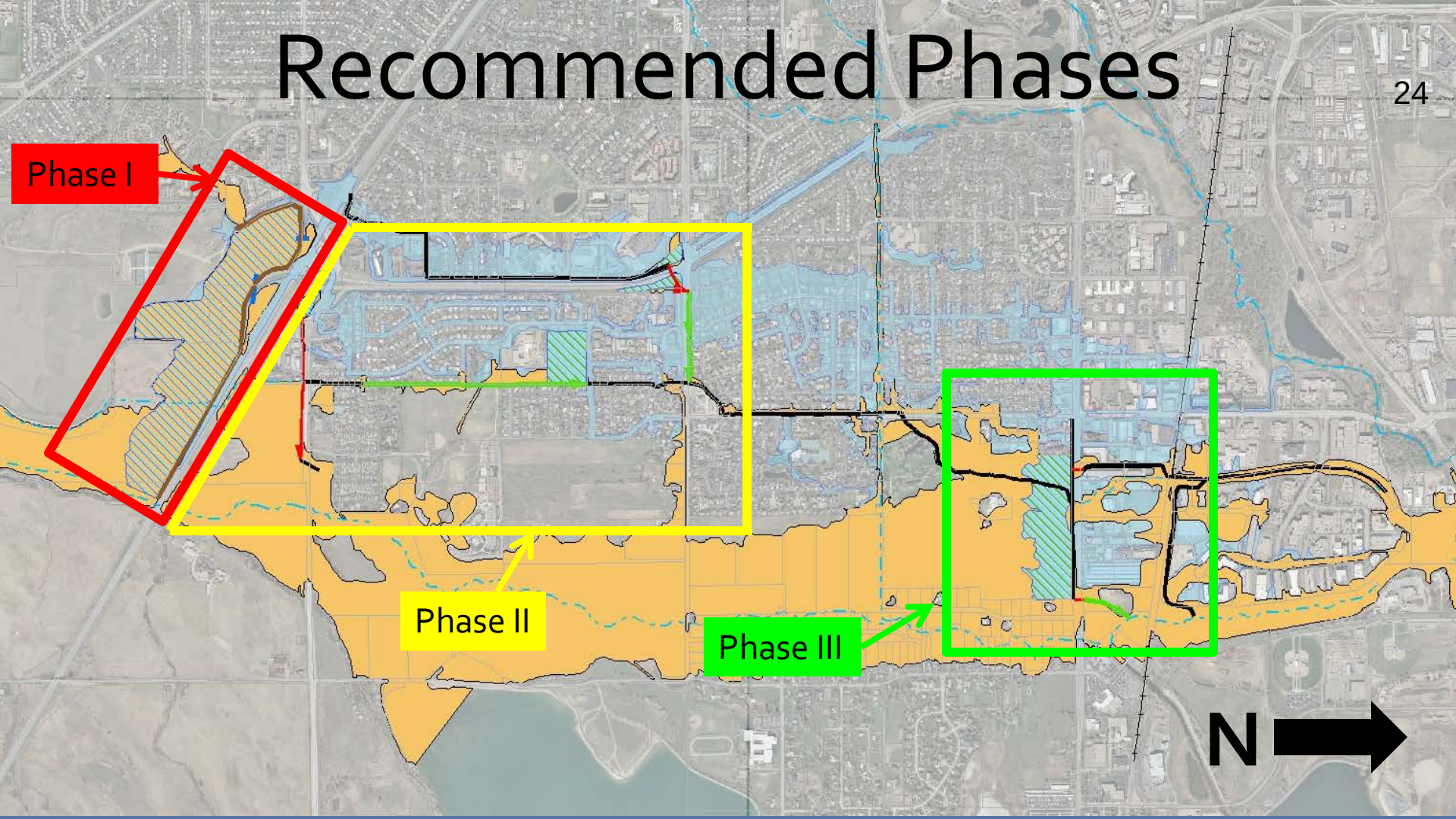
Rendering of Proposed Detention Facility

Public Process

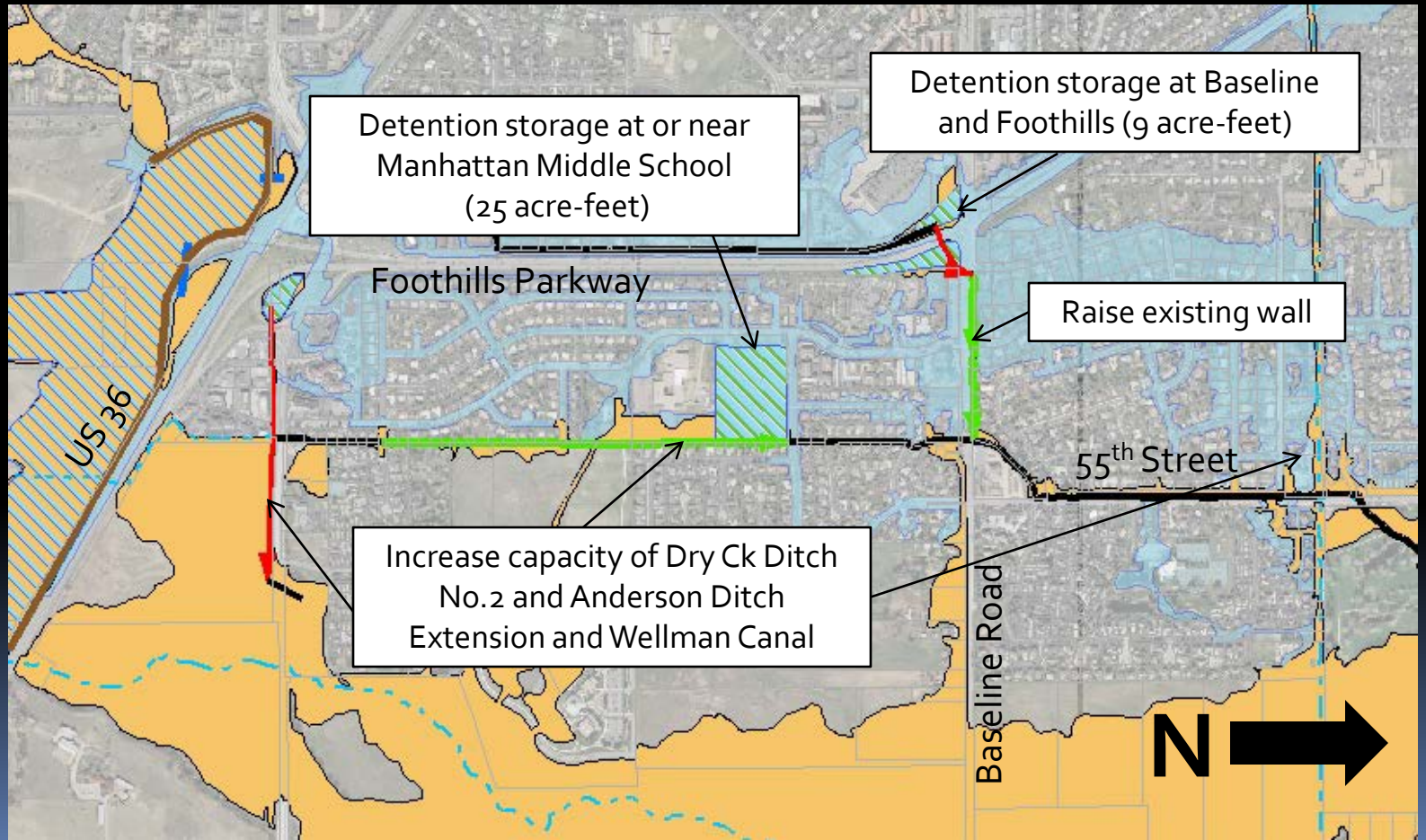
May 13, 2015: Open Space Board of Trustees

May 18, 2015: Water Resources Advisory Board

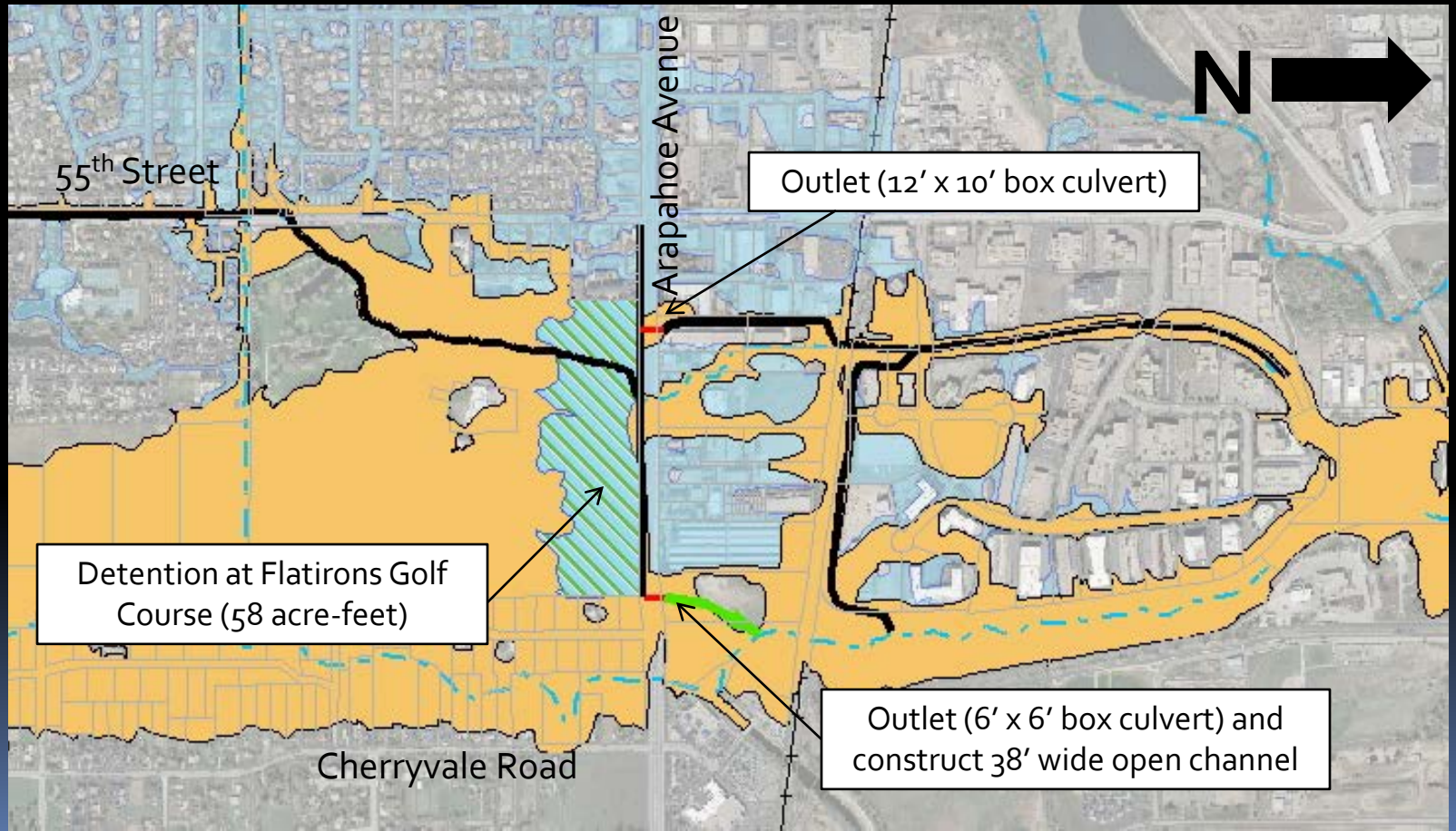
Recommended Phases



Phase II


Detention storage at Baseline and Foothills (9 acre-feet)
Detention storage at or near Manhattan Middle School (25 acre-feet)
Foothills Parkway
Raise existing wall
US 36
55th Street
Increase capacity of Dry Ck Ditch No.2 and Anderson Ditch Extension and Wellman Canal
Baseline Road
N

Phase III


N
55th Street
Arapahoe Avenue
Outlet (12′ x 10′ box culvert)
Detention at Flatirons Golf Course (58 acre-feet)
Outlet (6′ x 6′ box culvert) and construct 38′ wide open channel
Cherryvale Road

Financing

$22 Million: Phase I-Regional Detention at US36
$11 Million: Phase II: West Valley Improvements
$11 Million : Phase III: Arapahoe Ave. Detention
$44 Million: Total Project Cost

Next Steps

Phase I - Regional Detention:

- Refinement and further engineering of Option D
- Continue discussions with CU and CDOT

Phases II and III – Downstream Improvements

- Initiate CEAP

Recommended Motion

Motion to accept the South Boulder Creek Major Drainageway Flood Mitigation Plan, including Option D (single berm using Colorado Department of Transportation right of way and University of Colorado Boulder South Campus property) for "Regional Detention at US 36," along with the Phase II and Phase III downstream improvements, as the recommended comprehensive alternative to mitigate flood risks associated with South Boulder Creek.

Questions?