



WESTMINSTER
COLORADO

Water 2025 | Site Evaluation Process

Last updated: 4/11/2019

WATER **2025**

Water 2025 Technical Process

Over the past year, the city has conducted a comprehensive data-driven evaluation to identify two potential locations for Westminster's new drinking water facility. As part of the ongoing process, over 50 sites have been methodically eliminated based on increasingly stringent technical criteria and community input.

Site Selection Process and Timeline



Milestone 1 Inclusive List

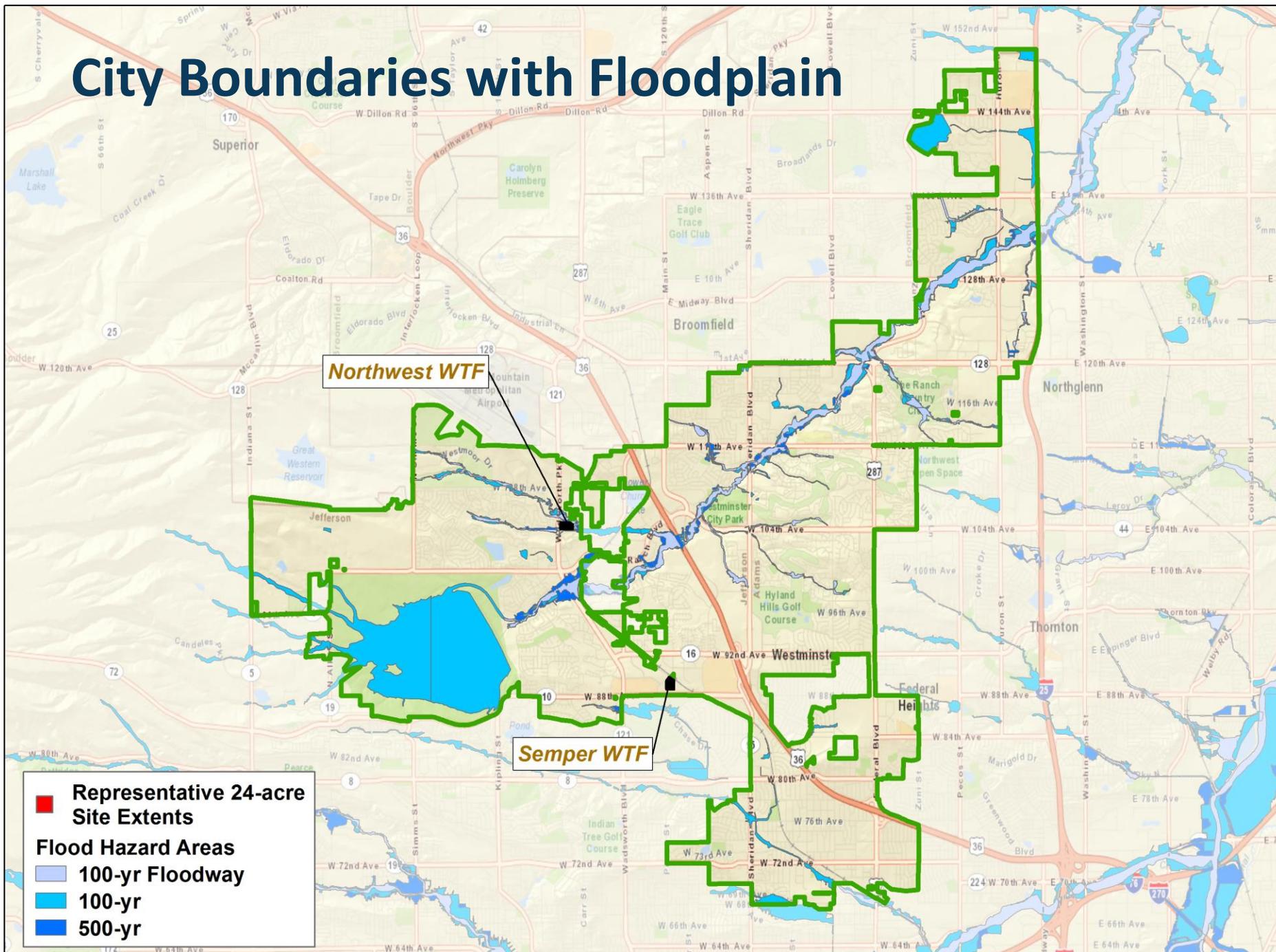
Long list of 50+ sites identified by:

- Minimum Size
- Outside of Floodplain

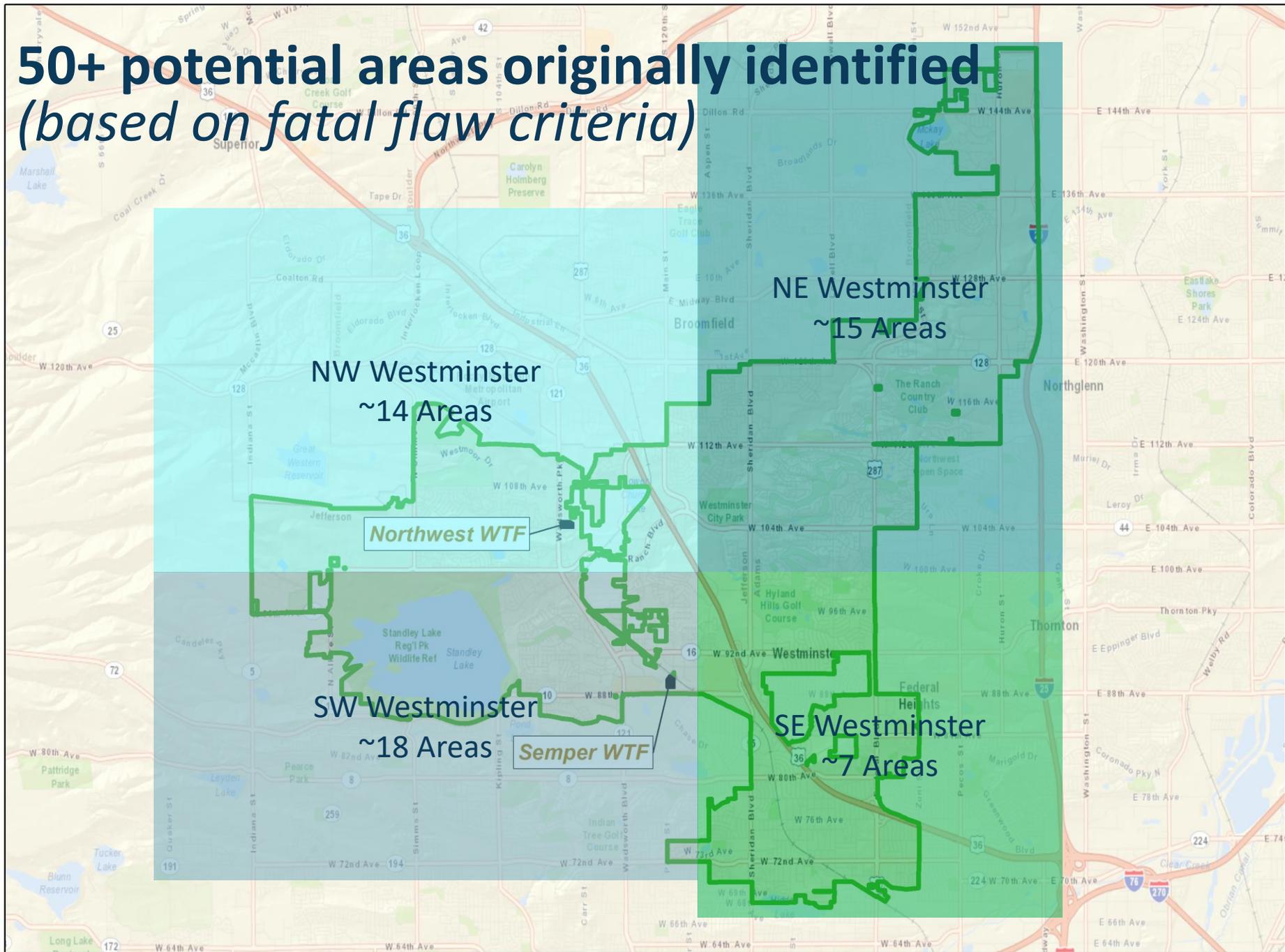
Technical Criteria

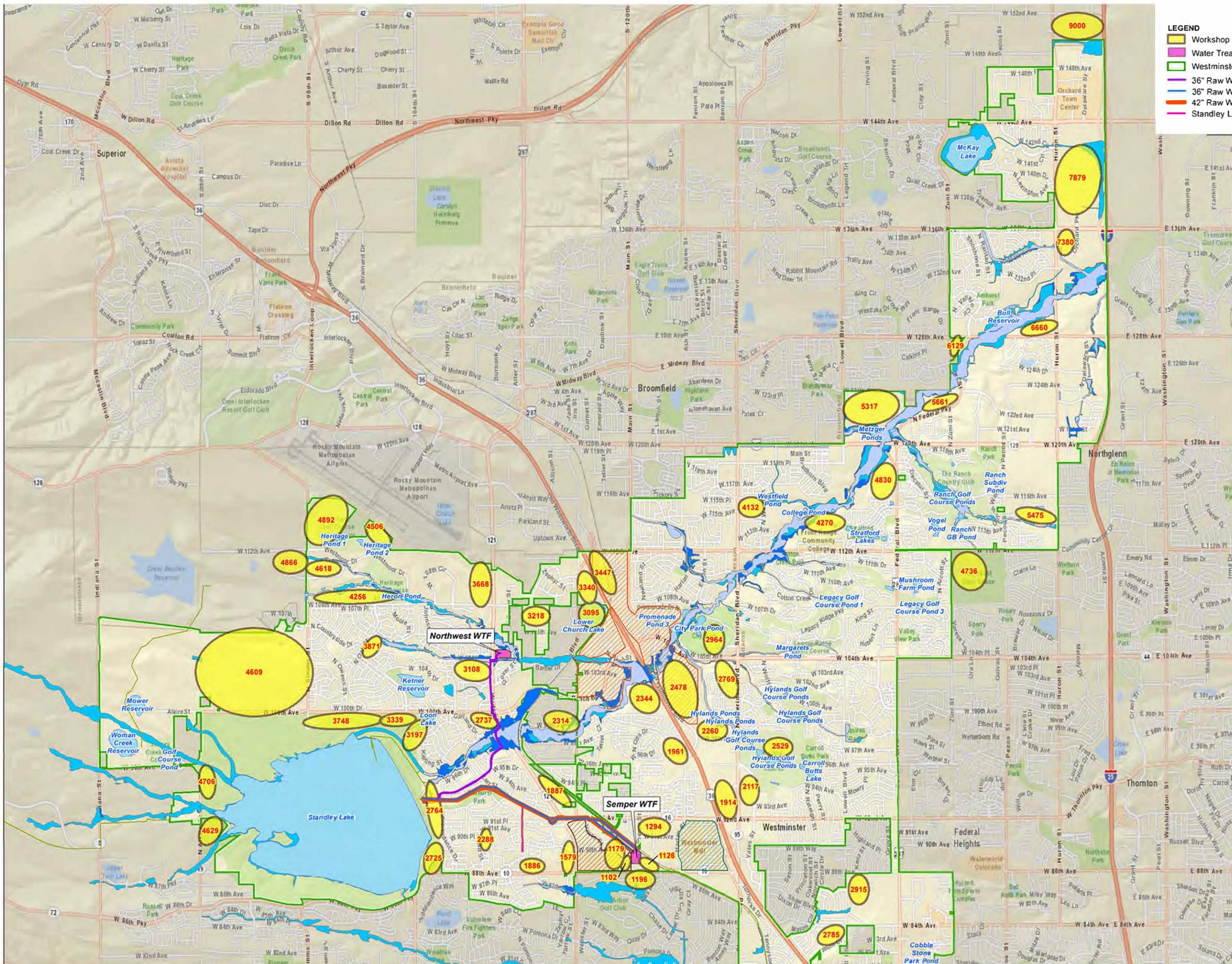
- **Fatal Flaw - Inclusive list of 50+ Sites Identified by:**
 - 24 acre minimum (20 acre plant/4 acre buffer)
 - Beyond 100-year floodplain

City Boundaries with Floodplain



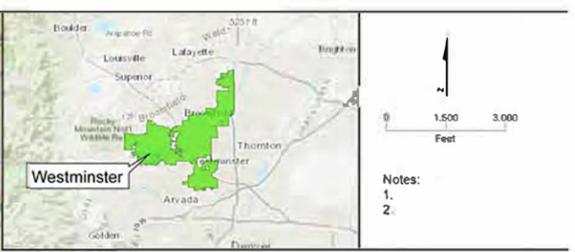
50+ potential areas originally identified (based on fatal flaw criteria)





LEGEND

- Workshop Candidate Locations
- Water Treatment Facilities
- Westminister Boundary
- 36" Raw Water Pipeline to Northwest WTF
- 36" Raw Water Pipeline to Semper WTF
- 42" Raw Water Pipeline to Semper WTF
- Standley Lake Bypass Pipeline
- Brookhill Focus Area
- Church Ranch Focus Area
- Downtown Westminister Focus Area
- 100yr Floodway
- 100 yr
- 500 yr



Notes:
1.
2.

Candidate Site Locations
Water 2025 Site Selection
City of Westminister

**DRAFT
WORK
PRODUCT**



Milestone 2

Potential Sites

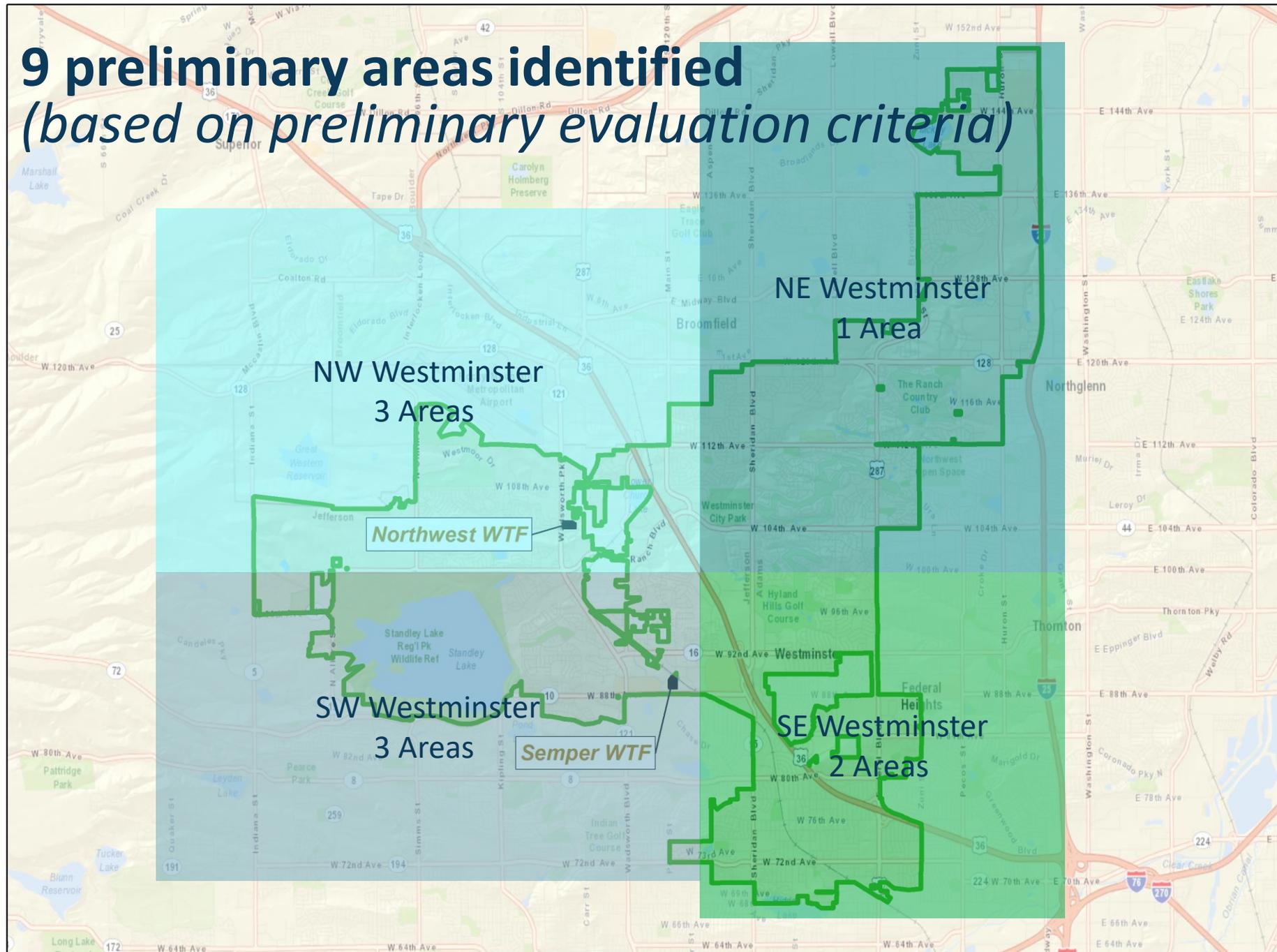
50+ sites narrowed to list of 9 identified by:

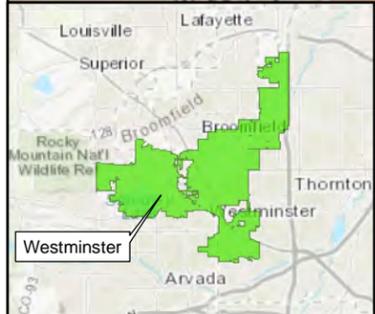
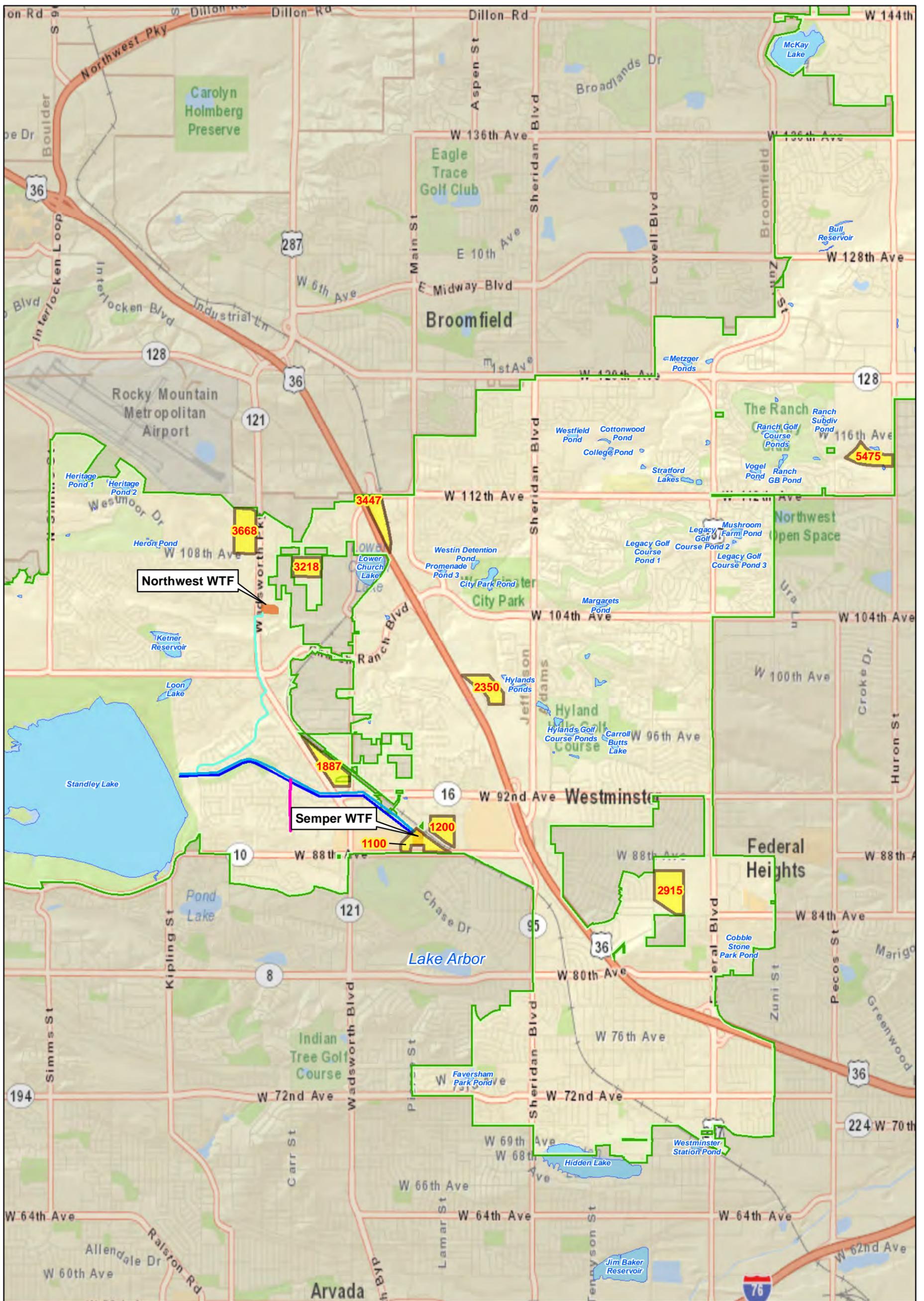
- Preliminary Technical Criteria
- Preliminary Community Criteria
- Preliminary Site Criteria
- Community Input

Preliminary Evaluation Criteria

- **Engineering**
 - Site hydropower potential: Mitigates pumping requirements
 - Location: Minimizes effective pipe distance
 - Minimizes need for terminal (onsite) storage and pumping
- **Site**
 - Access: Connects directly to a major arterial or collector street
- **Community**
 - Minimizes potential impact to critical community assets, such as parks, high value open space, prime commercial areas, residential areas or schools

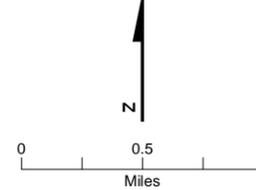
9 preliminary areas identified (based on preliminary evaluation criteria)





- LEGEND**
- Potential Site
 - Water Treatment Facilities
 - Westminister Boundary
 - 36" Raw Water Pipeline to Northwest WTF
 - 36" Raw Water Pipeline to Semper WTF
 - 42" Raw Water Pipeline to Semper WTF
 - Standley Lake Bypass Pipeline

Potential Sites
 Water 2025 Site Selection
 City of Westminister



		1	2	3	4	5
1. Community						
	Does not impact a critical community asset: Parks, Open Space, Established residential, focus/redevelopment areas, Prime commercial areas, or schools	Impacts a critical community asset. Cannot be mitigated	-	Impacts a critical community asset. Can be mitigated on or off site	-	Does not impact a critical community asset. No mitigation required
2. Facility Engineering						
Combined as one Value	Site Hydropower Potential Mitigates Pump Requirements: Net (KW use)/(MG treated) per day-- Site energy requirement (pumping minus hydropower)	Most Energy Use				Least Energy use
	Minimizes Effective Pipe Distance: Pipe distance from nearest point on raw water source to site and back to Semper clearwell following roads and established corridors, with a one mile 'penalty' for each highway, railroad, or wetland intersection	24 miles or more	Less than 24 miles	Less than 18 miles	Less than 12 miles	Less than 6 miles
	Minimizes Need for Terminal Storage and Pumping: Does raw water flow by gravity or does it require terminal storage which will necessitate a larger site and, potentially, yield algae growth that will degrade water quality in the terminal reservoir	Higher than Standley Lake: Must be pumped	-	Higher than Standley Lake, must be pumped AND there is sufficient room for mitigating pumping requirement	-	Lower than Standley Lake: can flow by gravity
3. Site						
	A Connects directly to a major arterial or collector: Direct access facilitates operations and minimizes disturbance to community	Does not Connect	-	Can connect with minimal infrastructure	-	Connects
		1	2	3	4	5

Site Number	1102	1126	1179	1196	1294	1579	1886	1887	1914	1961	2117	2260
Fatal Flaw' Criteria												
24 Acre minimum (20 acre plant/ 4 acre buffer)	-	-	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Beyond 100-Year Floodplain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Site Criteria												
1. Community												
A. Does not impact a critical community asset	3	3	1	1	3	1	1	3	1	1	1	3
Parks, Open Space, Established residential, focus/redevelopment areas, Prime commercial areas, or schools	Commercial	Municipal Service Center	Focus Area: Brookhill and Residential	Park: Golf	(refined site limits to light industrial only: not commercial)	Commercial	School	commercial and open space	Commercial	Park: Trentwood	Commercial	OS/ Westpointe
2. Facility Engineering												
A. Site Hydropower Potential Mitigates Pump Requirements.												
Net (KW use)/(MG treated) per day-- Site energy requirement (pumping minus hydropower)	4	4	4	4	5	5	5	3	5	3	5	2
	5.0	5.6	4.5	6.4	1.8	3.8	4.2	7.2	4.1	7.3	4.4	9.6
B. Minimizes Effective Pipe Distance	5	5	5	5	5	5	5	5	4	4	4	4
Pipe distance from nearest point on raw water source to site and back to Semper clearwell following roads and established corridors, with a one mile 'penalty' for each highway, railroad, or wetland intersection	0	1	2	1	4	3	5	4	6	8	8	12
C. Elevation Comparison to Standley Outfall	5	5	5	5	3	1	1	5	5	5	5	5
Does water flow by gravity or require pumping from Standley Lake	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site	Pump Up to Site	Pump Up to Site	Pump Up to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site
Averaged Engineering Criteria	4.7	4.7	4.7	4.7	4.3	3.7	3.7	4.3	4.7	4.0	4.7	3.7
3. Site												
A. Connects directly to a major arterial or collector	5	5	5	5	5	5	5	5	5	5	5	5
Direct access facilitates operations and minimizes disturbance to community	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Total with top 25% Highlighted	12.7	12.7	10.7	10.7	12.3	9.7	9.7	12.3	10.7	10.0	10.7	11.7

Site Number	2314	2344	2478*	2529	2725	2764	2769	2785	2915	2964	3095	3108
Fatal Flaw' Criteria												
24 Acre minimum (20 acre plant/ 4 acre buffer)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Beyond 100-Year Floodplain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Site Criteria												
1. Community												
A. Does not impact a critical community asset	1	3	5	1	3	3	3	1	5	1	1	1
Parks, Open Space, Established residential, focus/redevelopment areas, Prime commercial areas, or schools	School	Open Space		Park: Golf	Residential: one house		Residential	Residential	Agriculture	Park: City Park	Open Space: Lower Church Lake	School: Standley Lake HS
2. Facility Engineering												
A. Site Hydropower Potential Mitigates Pump Requirements.												
Net (KW use)/(MG treated) per day-- Site energy requirement (pumping minus hydropower)	2	2	3	3	3	4	2	5	4	1	2	3
	11.5	12.1	11.8	6.5	6.6	4.9	9.8	2.5	4.8	12.6	11.7	8.3
B. Minimizes Effective Pipe Distance	3	4	4	3	4	5	3	4	4	3	3	4
Pipe distance from nearest point on raw water source to site and back to Semper clearwell following roads and established corridors, with a one mile 'penalty' for each highway, railroad, or wetland intersection	16	10	13	18	6	5	14	13	14	21	20	12
C. Elevation Comparison to Standley Outfall	5	5	5	5	1	5	5	1	1	5	5	5
Does water flow by gravity or require pumping from Standley Lake	Flow by Gravity to Site	Pump Up to Site	Flow by Gravity to Site	Flow by Gravity to Site	Pump Up to Site	Pump Up to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site			
Averaged Engineering Criteria	3.3	3.7	4.0	3.7	2.7	4.7	3.3	3.3	3.0	3.0	3.3	4.0
3. Site												
A. Connects directly to a major arterial or collector	5	1	5	1	5	1	5	5	5	5	5	5
Direct access facilitates operations and minimizes disturbance to community	Y	-	Y	-	Y	-	Y	Y	Y	Y	Y	Y
Total with top 25% Highlighted	9.3	7.7	14.0	5.7	10.7	8.7	11.3	9.3	13.0	9.0	9.3	10.0

*Note: Due to site boundary shifts, Site 2478 was renamed as Site 2350.

Site Number	3197	3218	3339	3340	3447	3668	3748	4256	4270	4609	4618	4629
Fatal Flaw' Criteria												
24 Acre minimum (20 acre plant/ 4 acre buffer)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Beyond 100-Year Floodplain	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Site Criteria												
1. Community												
A. Does not impact a critical community asset	1	5	1	3	5	5	1	1	1	3	3	3
Parks, Open Space, Established residential, focus/redevelopment areas, Prime commercial areas, or schools	Open Space: Loon Lake	Open Space: Overland Trail	School	Open Space: Lower Church Lake	Focus Area: Church Ranch		HVOS	Park: Rec Center, Golf	HVOS	Open Space: Dog Park	Open Space	Residential
2. Facility Engineering												
A. Site Hydropower Potential Mitigates Pump Requirements.												
Net (KW use)/(MG treated) per day-- Site energy requirement (pumping minus hydropower)	4	3	5	2	2	4	4	5	1	2	5	3
	5.9	8.6	3.3	9.7	9.7	5.6	6.3	4.2	16.7	10.9	2.9	6.4
B. Minimizes Effective Pipe Distance	3	3	3	2	2	3	3	2	1	2	2	1
Pipe distance from nearest point on raw water source to site and back to Semper clearwell following roads and established corridors, with a one mile 'penalty' for each highway, railroad, or wetland intersection	16	17	17	22	23	16	19	23	33	25	27	30
C. Elevation Comparison to Standley Outfall	5	5	1	5	5	5	3	5	5	3	1	1
Does water flow by gravity or require pumping from Standley Lake	Flow by Gravity to Site	Flow by Gravity to Site	Pump Up to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site	Pump Up to Site	Flow by Gravity to Site	Flow by Gravity to Site	Pump Up to Site	Pump Up to Site	Pump Up to Site
Averaged Engineering Criteria	4.0	3.7	3.0	3.0	3.0	4.0	3.3	4.0	2.3	2.3	2.7	1.7
3. Site												
A. Connects directly to a major arterial or collector	5	5	5	5	5	5	5	5	3	5	5	5
Direct access facilitates operations and minimizes disturbance to community	Y	Y	Y	-	Y	Y	Y	Y	-	Y	Y	Y
Total with top 25% Highlighted	10.0	13.7	9.0	11.0	13.0	14.0	9.3	10.0	6.3	10.3	10.7	9.7

Site Number	4706	4736	4830	4892	5317	5475	7879	9000
Fatal Flaw' Criteria								
24 Acre minimum (20 acre plant/ 4 acre buffer)	Y	Y	Y	Y	Y	Y	Y	Y
Beyond 100-Year Floodplain	Y	Y	Y	Y	Y	Y	Y	Y
Site Criteria								
1. Community								
A. Does not impact a critical community asset	1	1	3	1	1	5	3	3
Parks, Open Space, Established residential, focus/redevelopment areas, Prime commercial areas, or schools	Open Space	Municipal: Northglenn WTF	Open Space: Big Dry Creek	Golf	Open Space: Metzger Farm		Focus Area	Open Space
2. Facility Engineering								
A. Site Hydropower Potential Mitigates Pump Requirements.								
Net (KW use)/(MG treated) per day-- Site energy requirement (pumping minus hydropower)	3	3	1	3	1	2	1	1
	6.5	8.5	16.3	8.2	17.7	9.1	20.6	18.6
B. Minimizes Effective Pipe Distance	2	2	1	2	1	1	1	1
Pipe distance from nearest point on raw water source to site and back to Semper clearwell following roads and established corridors, with a one mile 'penalty' for each highway, railroad, or wetland intersection	28	29	31	30	44	33	48	53
C. Elevation Comparison to Standley Outfall	1	5	5	3	5	5	5	5
Does water flow by gravity or require pumping from Standley Lake	Pump Up to Site	Flow by Gravity to Site	Flow by Gravity to Site	Pump Up to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site	Flow by Gravity to Site
Averaged Engineering Criteria	2.0	3.3	2.3	2.7	2.3	2.7	2.3	2.3
3. Site								
A. Connects directly to a major arterial or collector	5	5	5	5	5	5	5	5
Direct access facilitates operations and minimizes disturbance to community	Y	Y	Y	Y	Y	Y	Y	Y
Total with top 25% Highlighted	8.0	9.3	10.3	8.7	8.3	12.7	10.3	10.3

Open Space Technical Evaluation

The Water 2025 project has utilized a methodical, technical evaluation process to determine the best site(s) for the construction and operation of a drinking water treatment facility. This evaluation process applied an increasing number of criteria to potential sites to systematically eliminate those that were less-suited for infrastructure of this type.

Open Space was one of many criteria used in the site evaluation process. Each site received an individual score based on the General Management Classifications of Open Space outlined in [Westminster's 2014 Open Space Stewardship Plan](#).

This score was then combined with other criteria scores to form a site's overall score. A site's overall score was the determining factor for it either being removed from consideration or kept on the list of sites for further rounds of increasingly detailed evaluation.

Example: Site 3340 received a score of three (out of five) on the Open Space-related criterion; however, Facility Engineering-related scores came in very low because a facility built on this site would require a considerable amount of energy to treat the water. Additionally, the site's location would require greater length of pipe than other sites. These factors resulted in a low combined score for the site that did not meet the threshold for further consideration, and it was removed from the list of potential sites.

Milestone 3

Recommended Sites

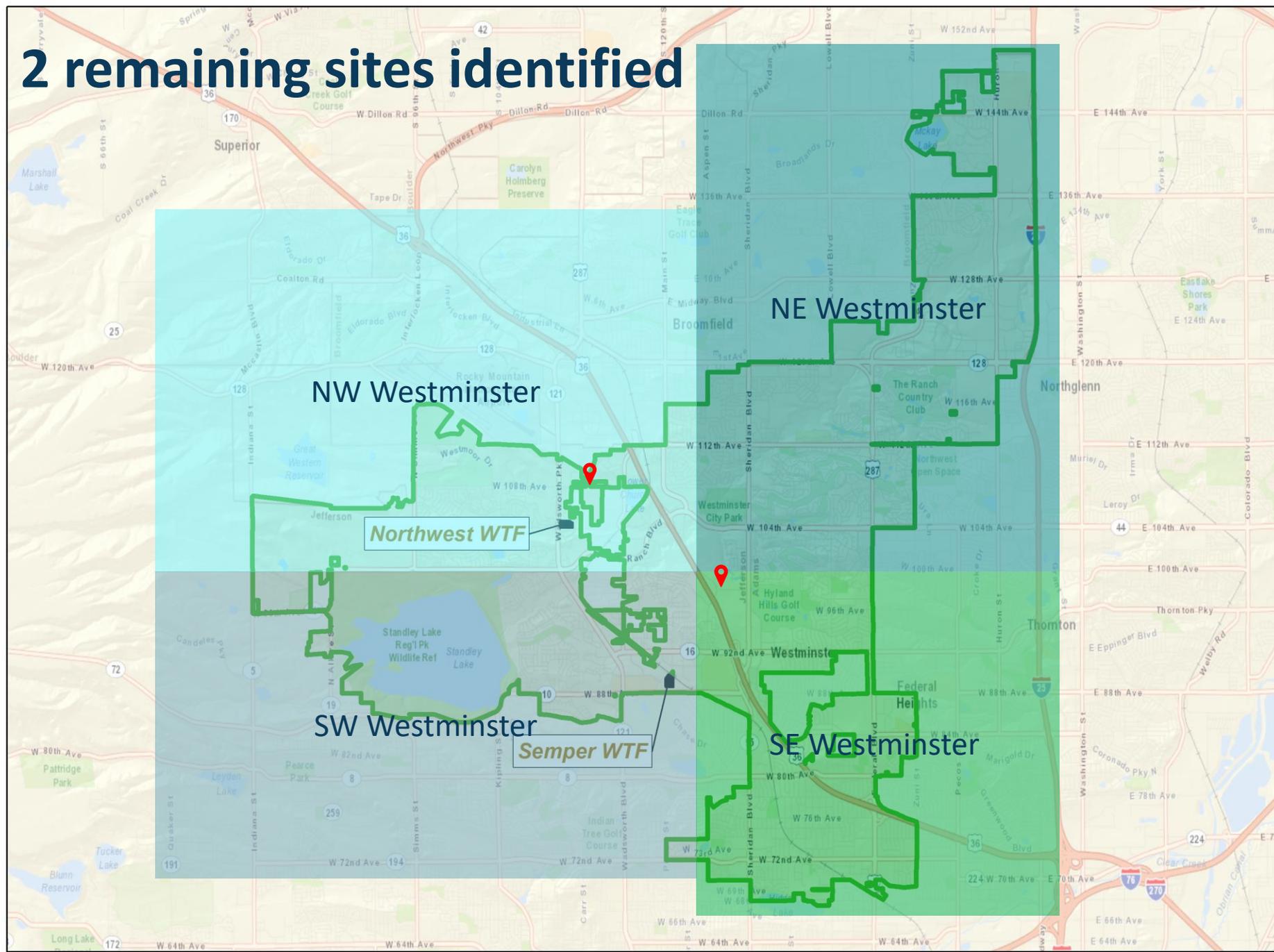
Top three sites identified by:

- Detailed Technical Criteria
- Detailed Community Criteria
- Detailed Site Criteria

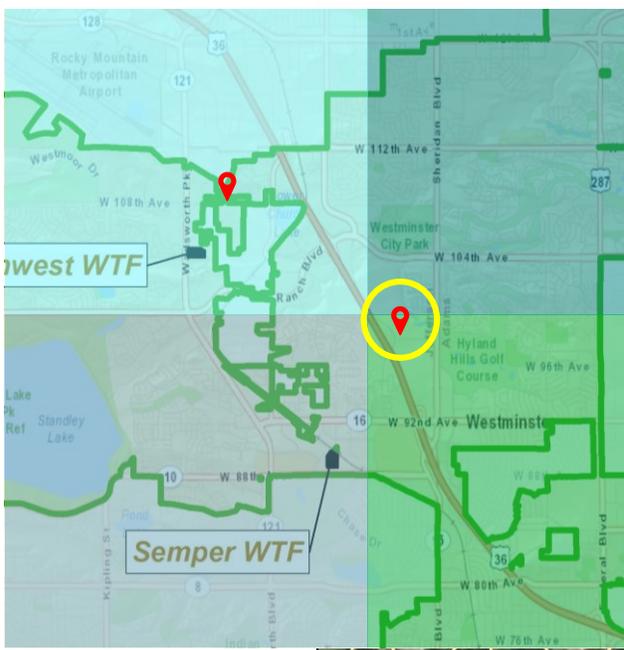
Additional Detailed Criteria

- **Engineering**
 - Schedule: Site supports project goal of being built by 2025
- **Site**
 - Security: Site requires mitigation for adjacency to railroad or highway
- **Community**
 - Compatibility: Site is compatible with surrounding existing and proposed development

2 remaining sites identified



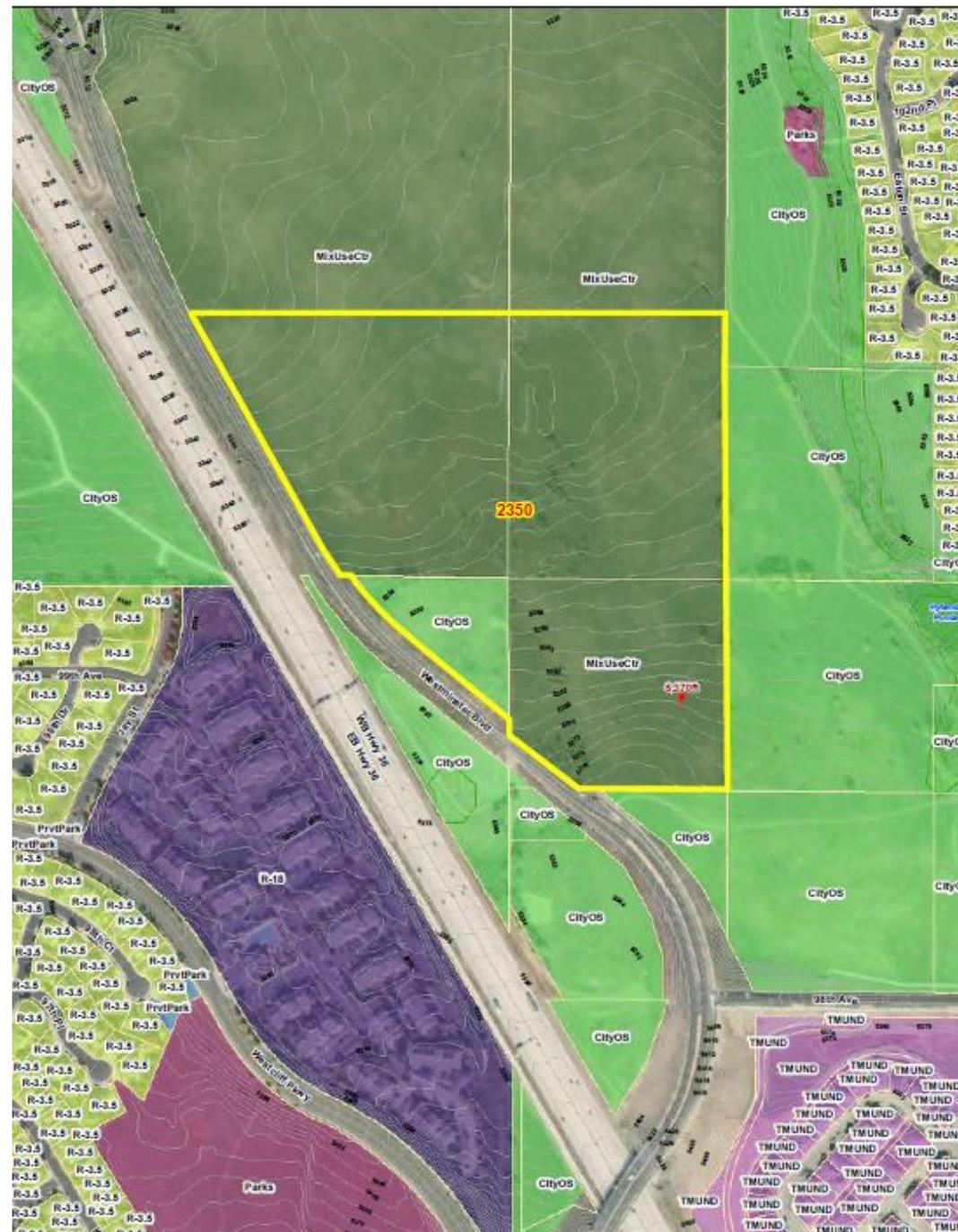
Site 2350 – SE Westminster



Site 2350 – Zoning

Comprehensive Plan 2013 Legend

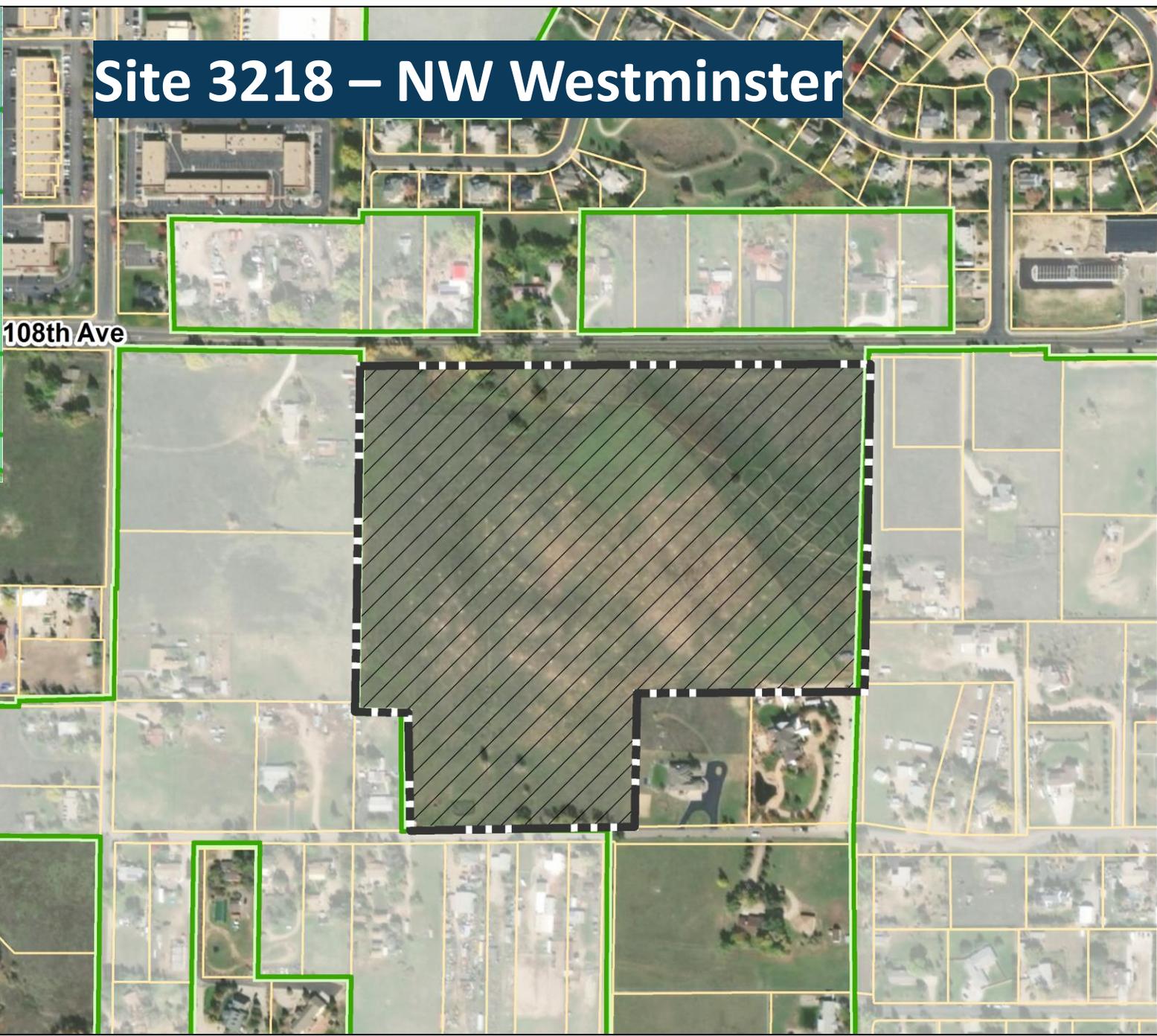
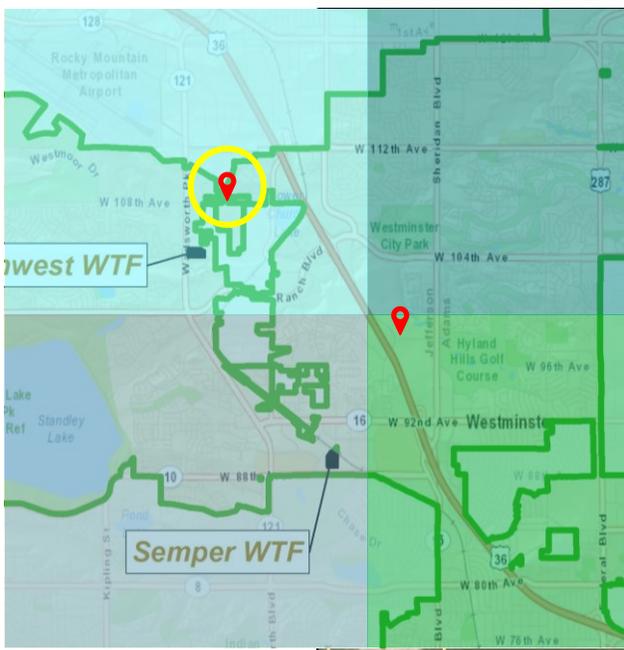
	<all other values>		
	Agricultural/Conservation Area		
	City Open Space		
	Flex/Light Industrial		
	Golf Courses		
	Major Creek Corridor		
	Mixed Use		
	Mixed Use Center		
	NE Comp LUP		
	Office		
	Office/RD High		
	Office/RD Low		
	Private Park / Private Open Space		
	Public Parks		
	Public/Quasi Public		
	R-1		R-5
	R-18		R-8
	R-2.5		Retail Commercial
	R-3.5		RxR ROW
	R-36		Service Commercial
			TMUND



Map Legend

	Potential Site
	Water Treatment Facilities
	Westminster Boundary
	36" Raw Water Pipeline to Northwest WTF
	36" Raw Water Pipeline to Semper WTF
	42" Raw Water Pipeline to Semper WTF
	Standley Lake Bypass Pipeline
	Highest Site Elevation Point
	Parcel Boundary
	NWI Wetland

Site 3218 – NW Westminster



City Boundaries

Site 3218 – Zoning

Comprehensive Plan 2013 Legend

- <all other values>
- Agricultural/Conservation Area
- City Open Space
- Flex/Light Industrial
- Golf Courses
- Major Creek Corridor
- Mixed Use
- Mixed Use Center
- NE Comp LUP
- Office
- Office/RD High
- Office/RD Low
- Private Park / Private Open Space
- Public Parks
- Public/Quasi Public
- R-1
- R-5
- R-18
- R-8
- R-2.5
- Retail Commercial
- R-3.5
- RxR ROW
- R-36
- Service Commercial
- TMUND



Map Legend

- Potential Site
- Water Treatment Facilities
- Westminster Boundary
- 36" Raw Water Pipeline to Northwest WTF
- 36" Raw Water Pipeline to Semper WTF
- 42" Raw Water Pipeline to Semper WTF
- Standley Lake Bypass Pipeline
- Highest Site Elevation Point
- Parcel Boundary
- NWI Wetland

Site Number

1100*
(1102/1126)

1200*
(was 1294)

3. Criteria for Recommended Sites

1. Community

A. Community Compatibility

5

3

5 = Compatible with surrounding existing and proposed development
3 = Incompatible with surrounding proposed development
1 = Incompatible with surrounding existing development

Downtown

2. Facility Engineering

A. Site supports project goal of being built by 2025

1

5

Does site require an adjunct project that diverts the critical path for the project schedule? (1 = Yes, 5 = No)

MSC Relocation

3. Site

A. Site Security

1

1

Does site require mitigation for adjacency to railroad or highway?

Y

Y

Total Benefit Score

7.0

9.0

1887	2350* (2260/2478)	2915	3218	3447
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5	5	1	5	5
	Assumes proposed development could occur on a reduced scale	Neighborhood on west side of Lowell		CDOT Ownership

--	--	--	--	--

1	5	5	5	1
404 Permits for wetlands				CDOT ownership

--	--	--	--	--

1	5	5	5	1
Y	Y	Y	Y	Y

7.0	15.0	11.0	15.0	7.0
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3668

5475

5

3

Commerical
Development at
Huron Street

5

5

5

5

Y

Y

15.0

13.0

Site 3668 removed from consideration due to direct conflict with Rocky Mountain Metropolitan Airport master plan.

Site 3668

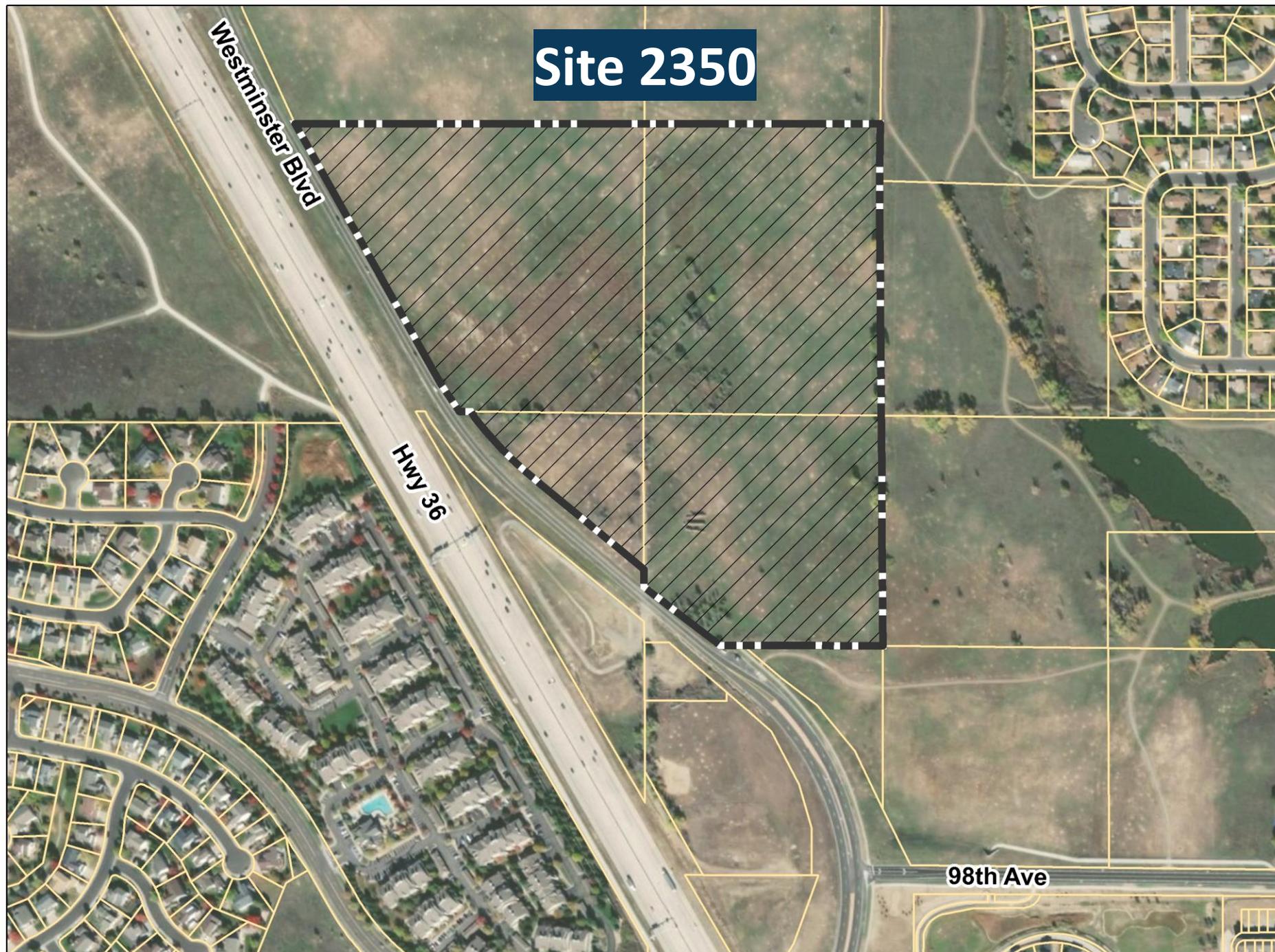


108th Ave

Wadsworth Pkwy

Site 3668 removed from consideration due to direct conflict with Rocky Mountain Metropolitan Airport master plan.

Characteristics of Top Two Sites



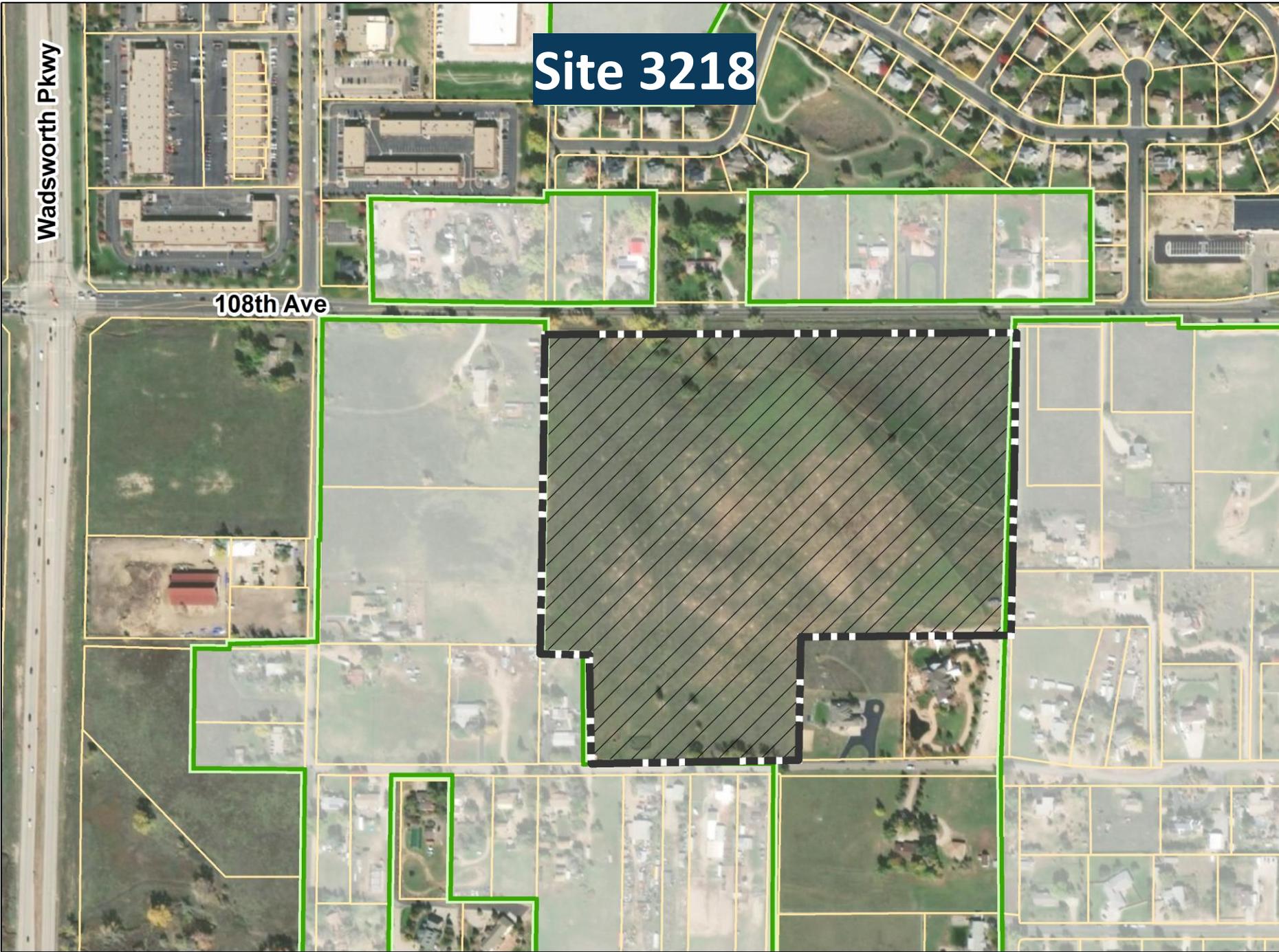
Site 2350

Benefits

- Direct site access from arterial/major collector street
- Flow by gravity to site
- Undeveloped/no existing buildings
- Large site size (~40 acres)
- Potential for multi-use trail connections

Challenges

- Greater distance from existing treatment/delivery utilities
- Property acquisition via private owner



Site 3218

Benefits

Direct site access from arterial/
major collector street

Flow by gravity to site

Undeveloped/no existing
buildings

Close to existing water
treatment facility

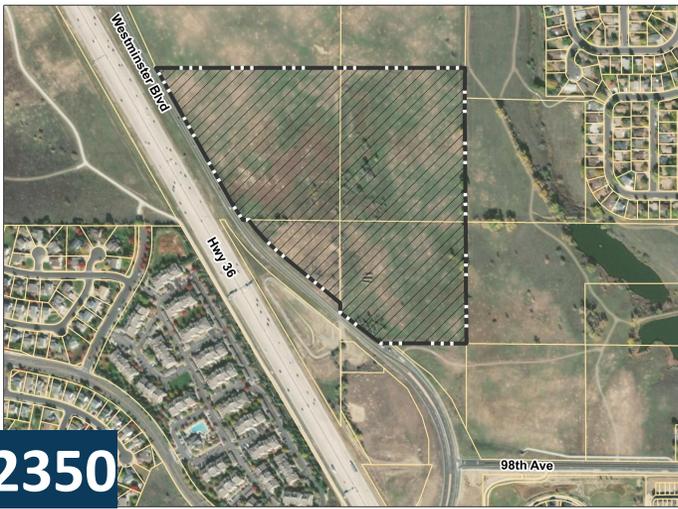
Potential for multi-use trail
connections

Challenges

More constrained site
(~30 acres)

Property acquisition via Inter-
Governmental Agreement (IGA)

City Boundaries



Site 2350

Key Differentiators



Site 3218

Private property	Current Land Use	Open Space (with Deed Restriction to replace comparable amount of Open Space)
Purchase at fair market value (cost to be determined)	Land Acquisition Process/Cost	Inter-Governmental Agreement for Open Space replacement (cost to be determined)
No key differentiation	Total Cost to Construct	No key differentiation
40 Acres	Site Size	30 Acres
No expansion needed	Expansion Potential	Additional property required
Potential for minimal/localized trail connections	Amenities	Opportunity to create trail system identified in Parks Master Plan