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Stream and Wetland Mitigation & Permitting

An Example from The Wasatch Front, Utah

Nathan Jean, PE

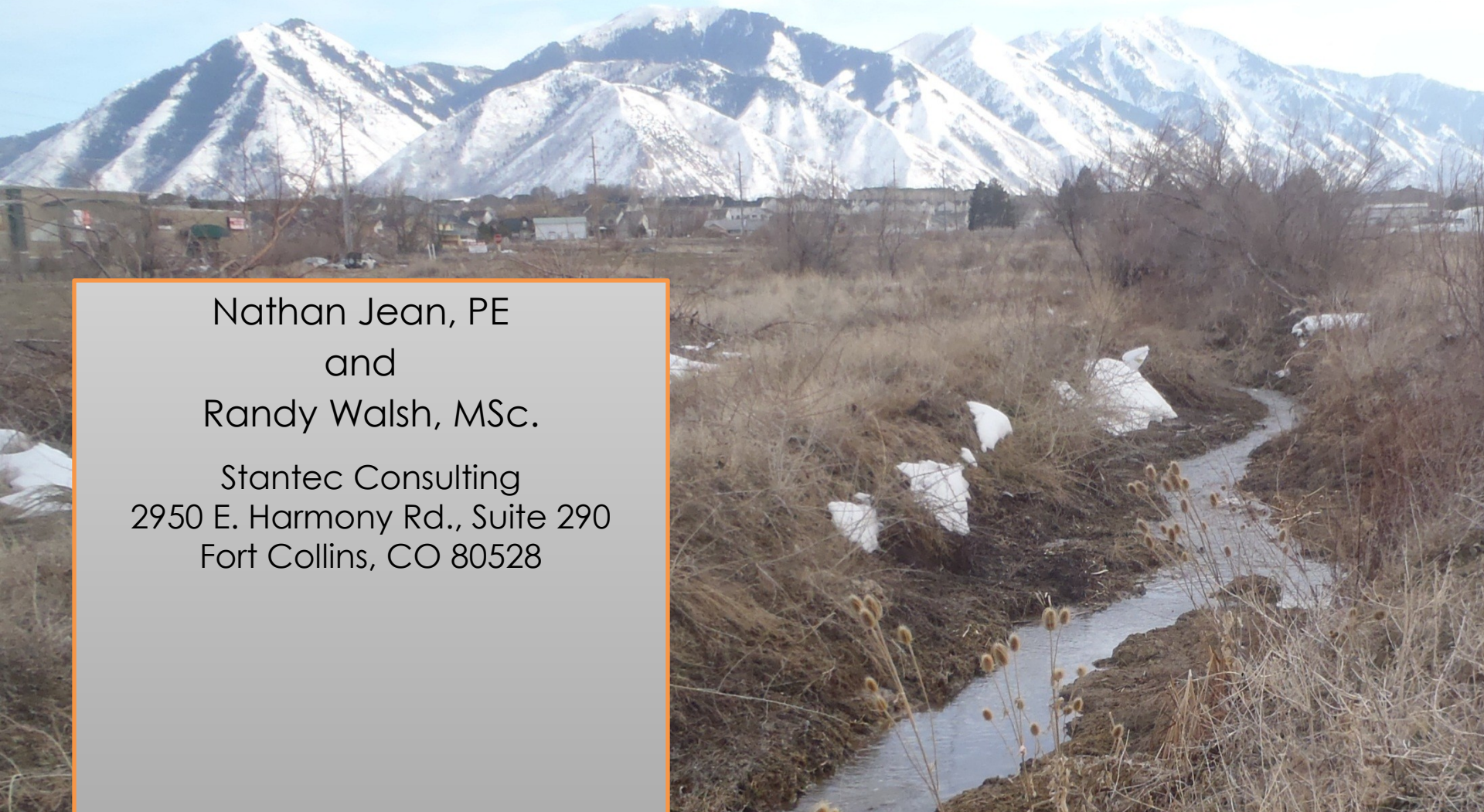
and

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Agenda

- 1** Project and Site Descriptions
- 2** Existing Conditions
- 3** §404 CWA Permitting
- 4** Mitigation Design
- 5** Monitoring

Canyon Crossing Project



- City of Spanish Fork, Utah
- Approx. 160 acre development
- Commercial/Retail Development
- Regional Medical Center

Proposed Impacts

Impacts

- Approx. 5000 lf stream channel
- Approx 0.8 acres playa wetland



Existing Conditions

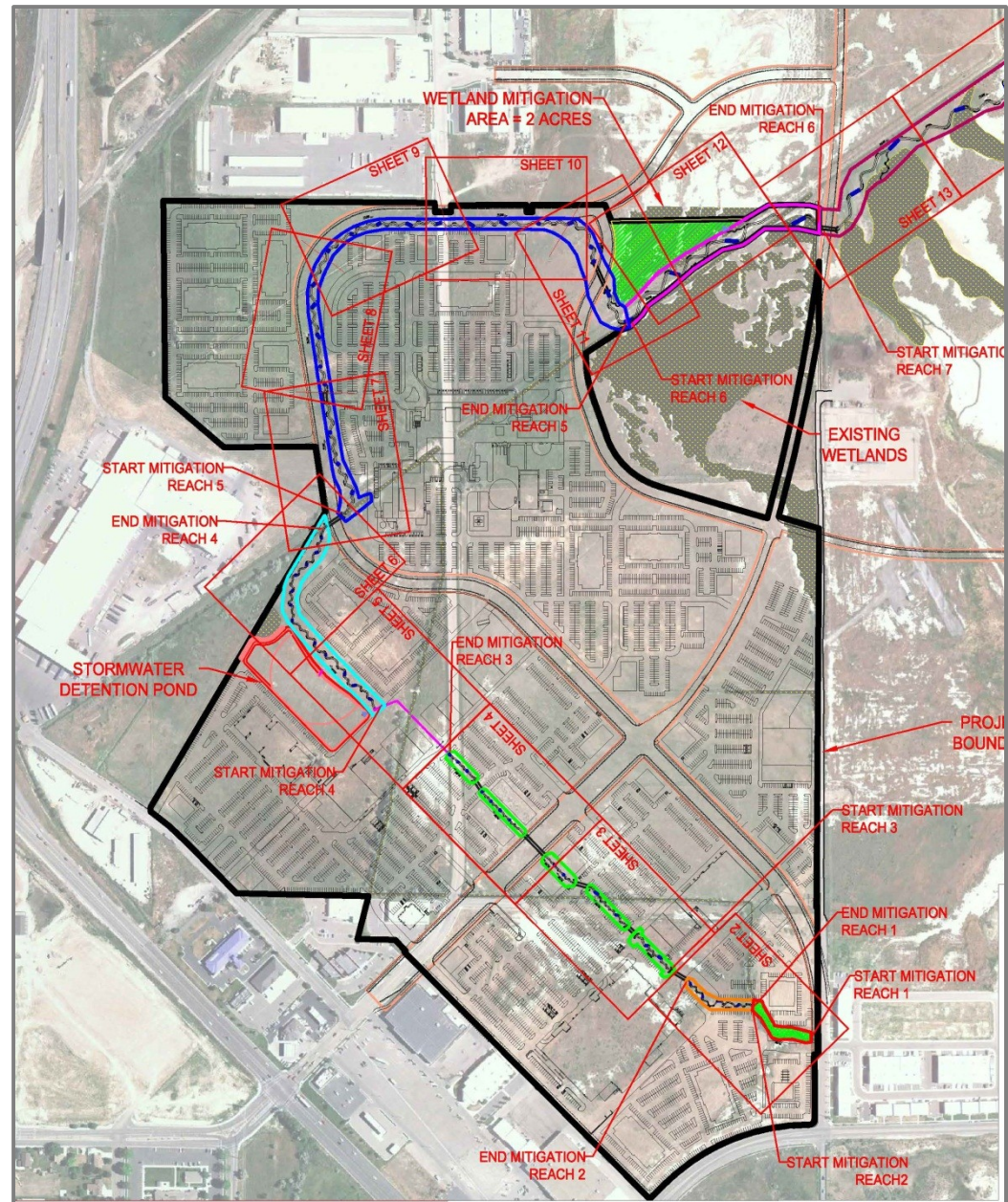
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Wetlands

Proposed Development

- Hospital
- Commercial/Retail
- Infrastructure associated with development
- Will result in impacts to wetlands/waters



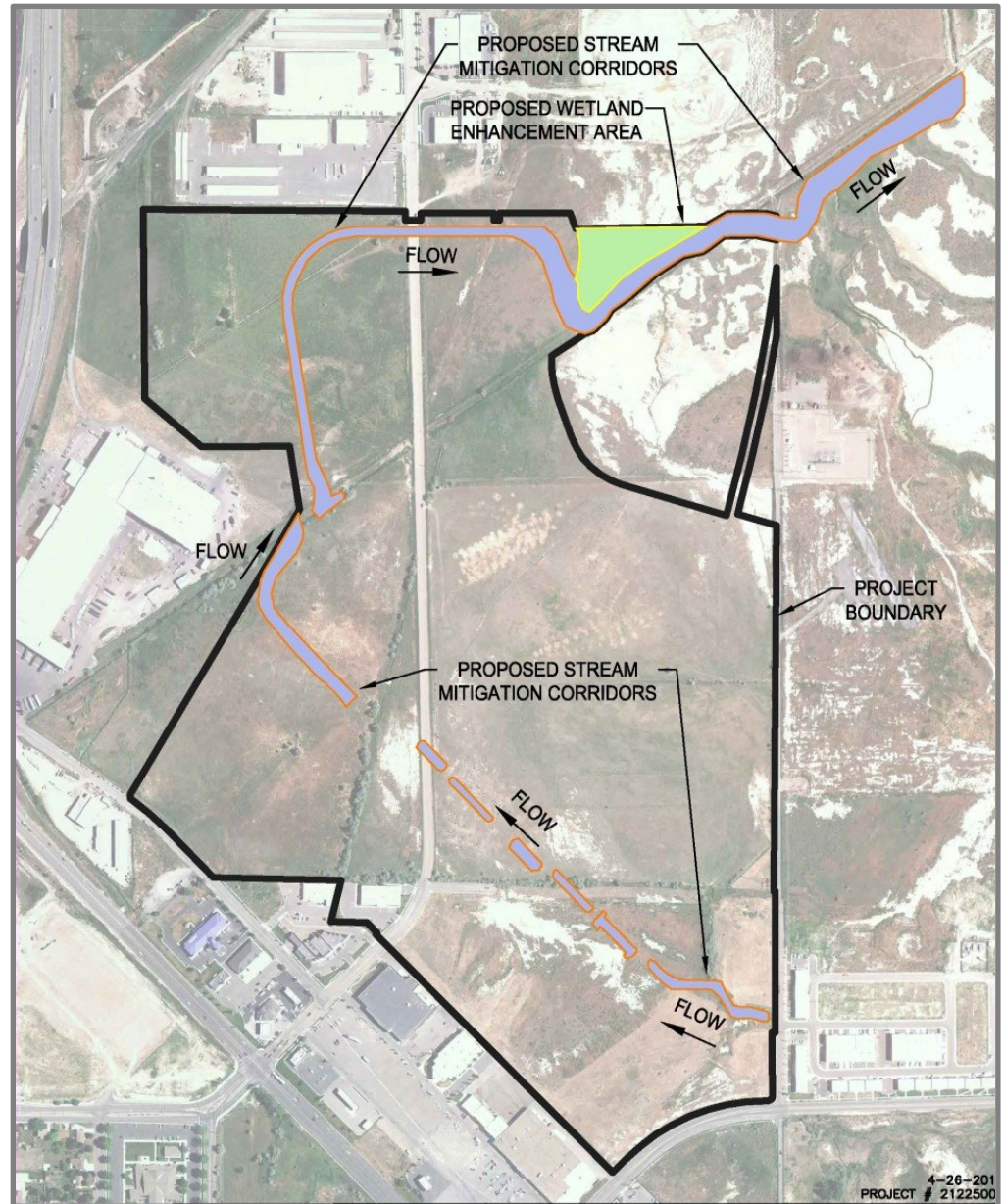
Proposed Mitigation

Onsite

- Stream channel = 7230 lf
- Wetlands = 2 acres

Offsite

- Stream channel = 1284 lf



4-26-201
PROJECT # 2122500

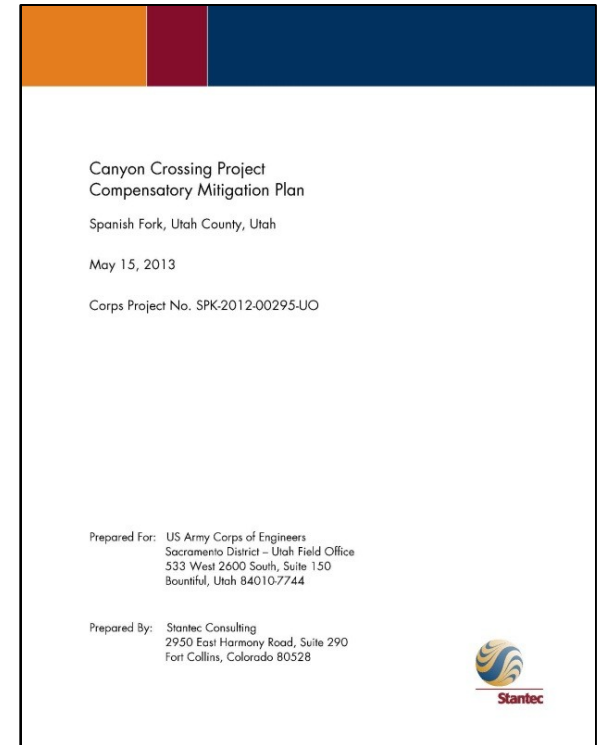
Permitting Process & Tasks

- Initial Permit application
(Project Proponent)
- ULT, Wetlands Delin. & Cultural
- Avoidance and Minimization
(Alternatives Analysis Document)
 - EPA's 404 (b)(1) Guidelines [40CFR230]
 - Project Site Alternatives
 - Practicability Analysis
 - Least Environmentally Damaging Practicable Alternative (LEDPA)

Permitting Process (Cont'd)

Mitigation Plan

- Existing conditions documentation
- Scientific justification of proposed approach
- Conceptual stream design
- Conceptual wetland enhancement design
- Conceptual riparian planting plan
- Monitoring Plan
- Define success criteria

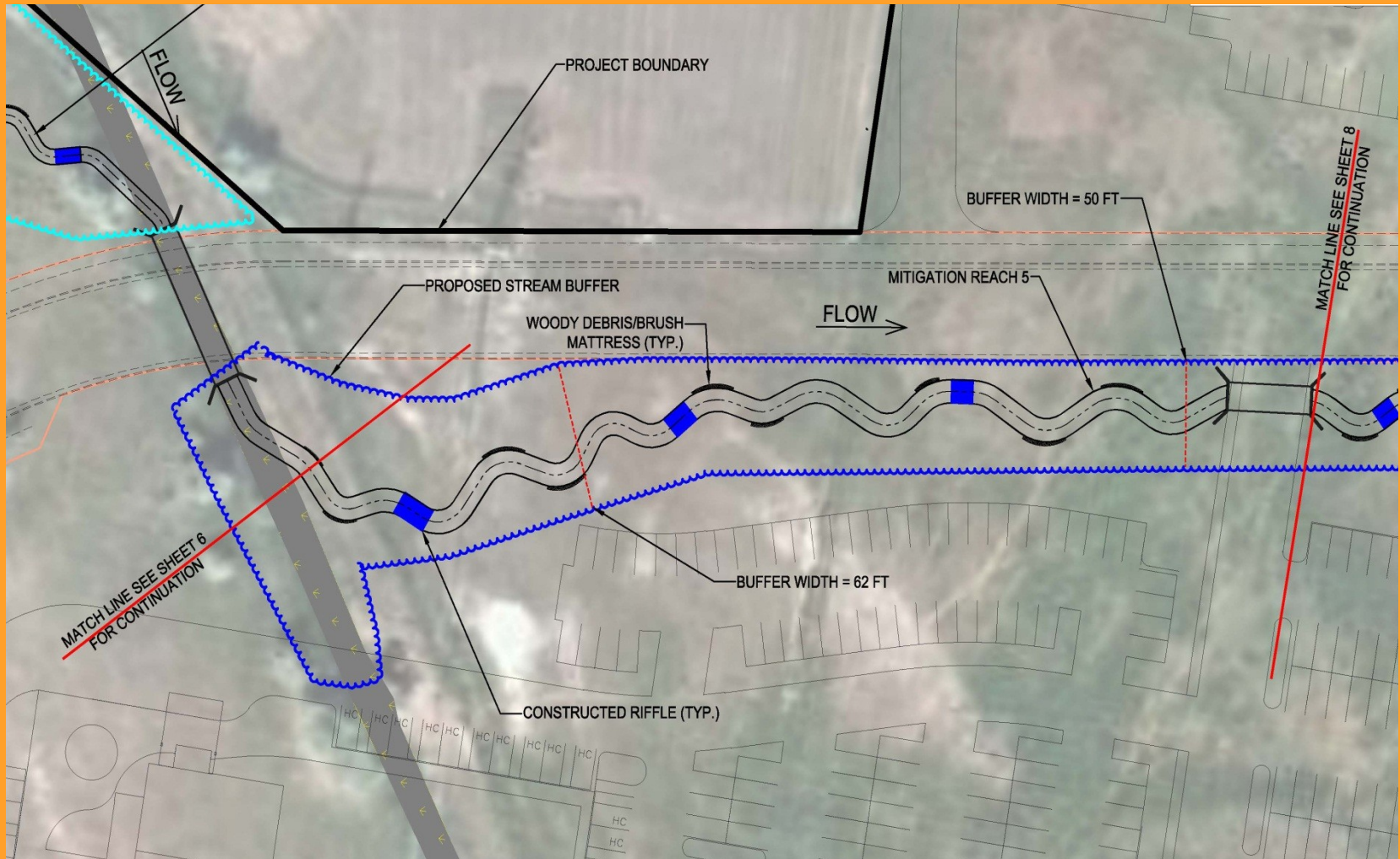


Mitigation Ratios

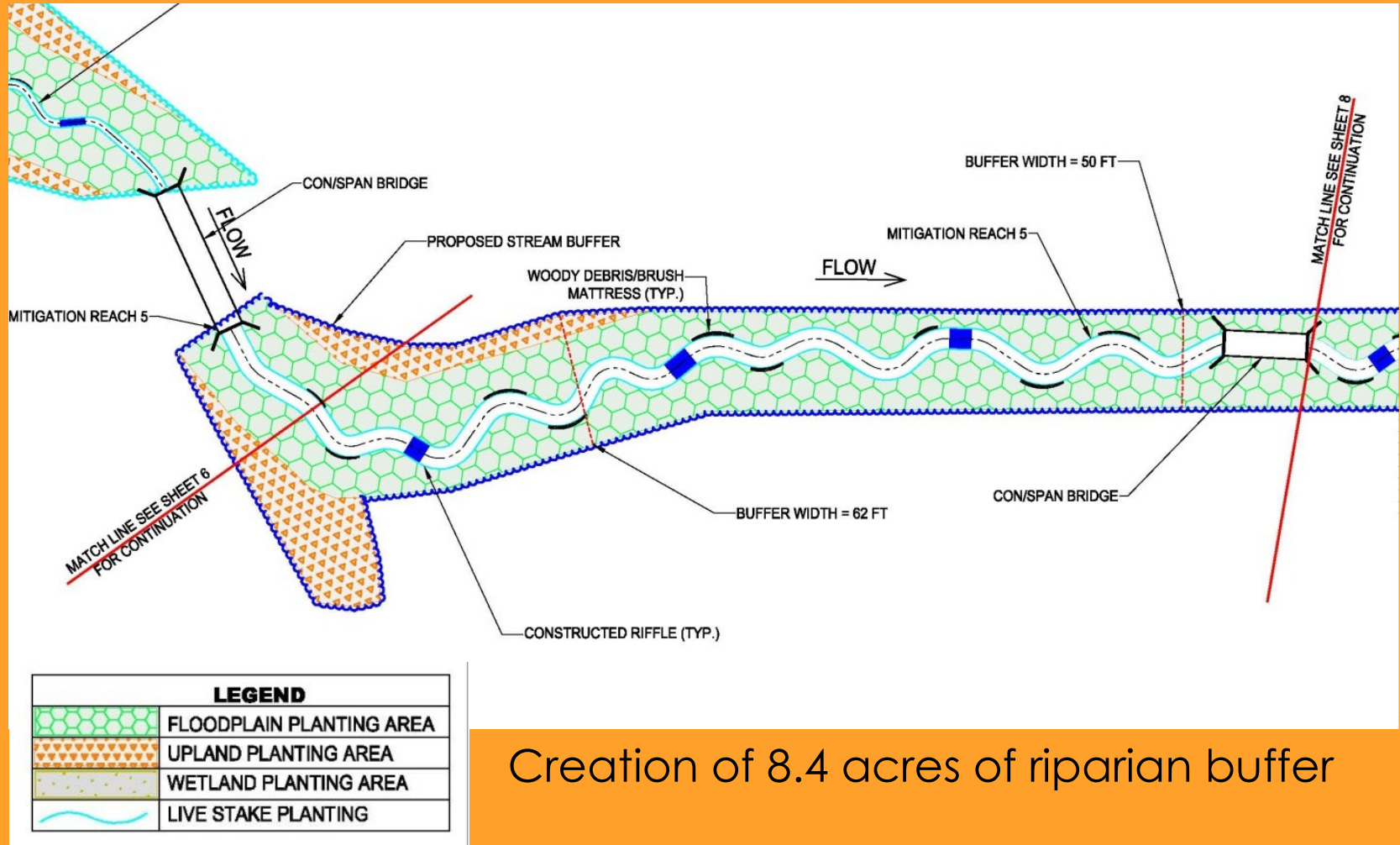
Stream Mitigation Segment	Location	Proposed Stream Length (ft)	Proposed Mitigation Ratio	Claimed Credits (ft)
1	onsite	300	5.0 to 1	60
2	onsite	372	1.0 to 1	372
3	onsite	1122	2.5 to 1	448
4	onsite	1140	1.0 to 1	1140
5	onsite	3180	1.9 to 1	1674
6	onsite	1116	1.0 to 1	1116
7	offsite	1284	2.0 to 1	642
Total		8514		5452

Total Wetland Areas Disturbed (Acres)	Wetland Area Enhanced (Acres)	Mitigation Ratio	Claimed Credits
0.8	2	2.5 to 1	0.8

Conceptual Stream Design



Conceptual Riparian Planting Design



Creation of 8.4 acres of riparian buffer

Monitoring

- 10 years(!!!)
- Quantitative geomorphic and vegetation surveys in years: 0, 1, 2, 4, 6, 8, 10
- Qualitative surveys conducted every year



Questions?

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Thank You!