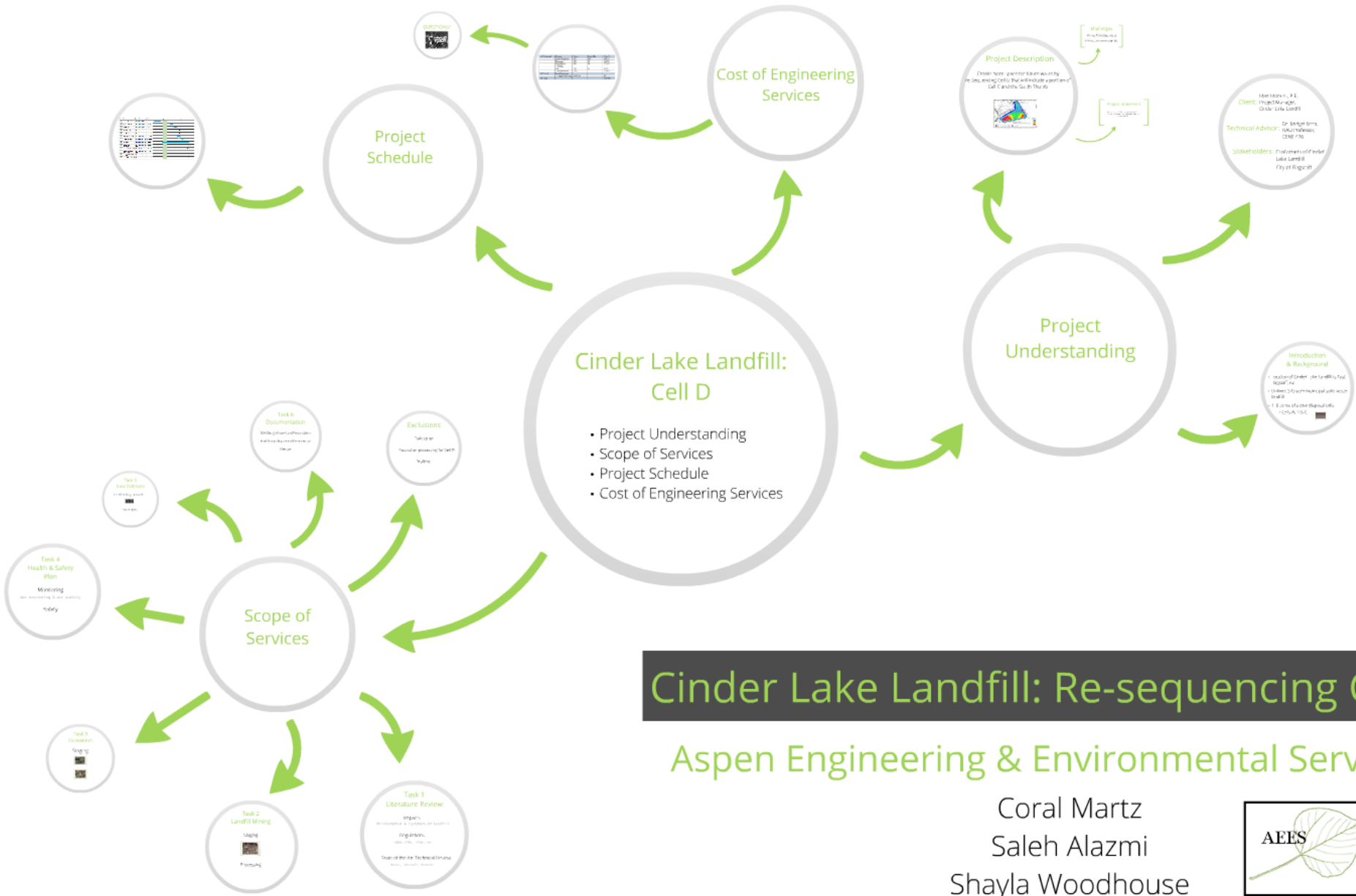


Cinder Lake Landfill: Re-sequencing Cell D

Aspen Engineering & Environmental Services

Coral Martz
Saleh Alazmi
Shayla Woodhouse





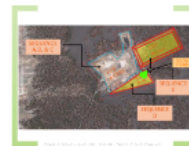
Cinder Lake Landfill: Cell D

- Project Understanding
- Scope of Services
- Project Schedule
- Cost of Engineering Services

Project Understanding

Introduction & Background

- Location of Cinder Lake Landfill is East Flagstaff, AZ
- Unlined 343-acre municipal solid waste landfill
- 110 acres of active disposal cells
 - Cells A, B & C



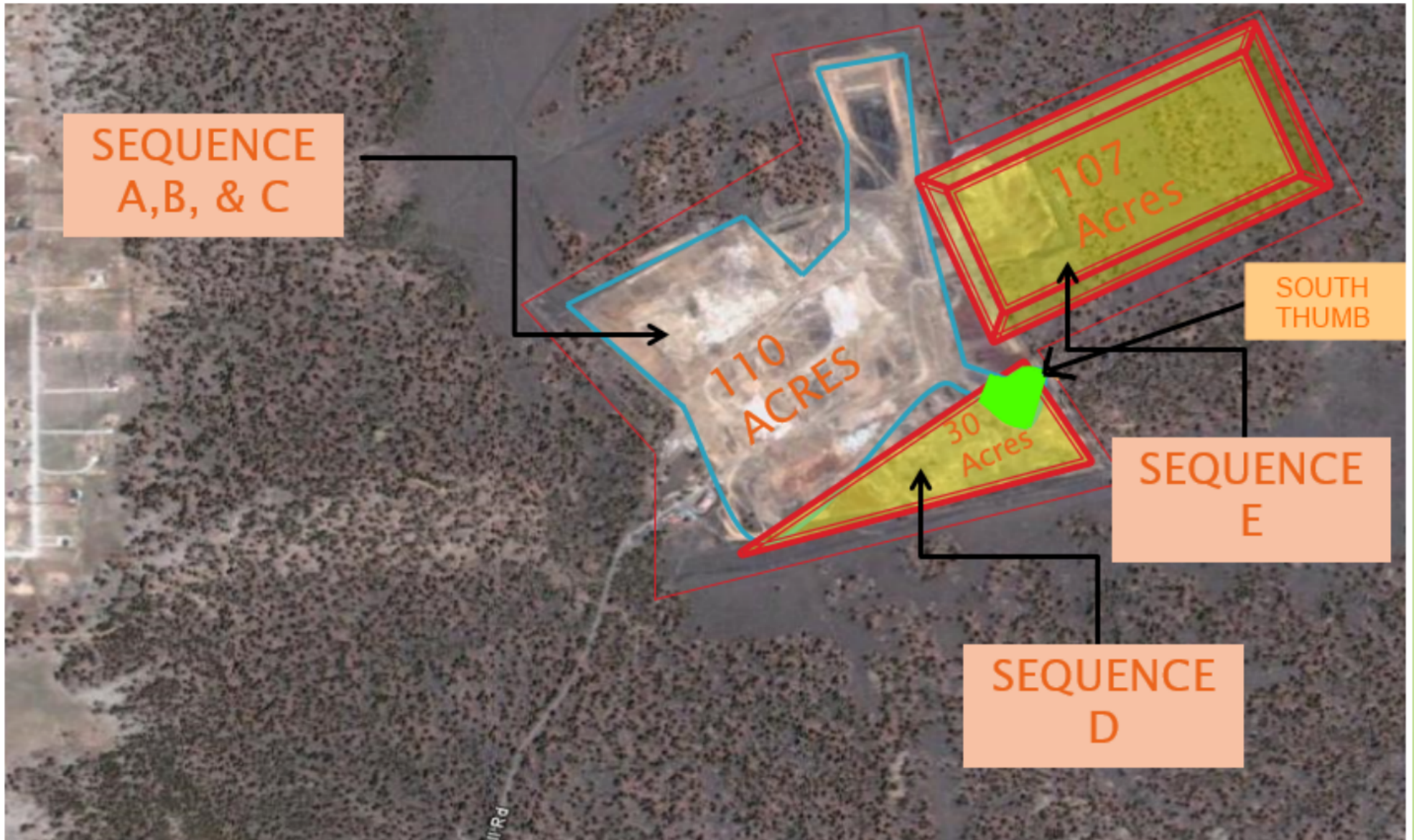


Figure 1: Aerial view of cell locations. Source: City of Flagstaff

Introduction & Background

- Location of Cinder Lake Landfill is East Flagstaff, AZ
- Unlined 343-acre municipal solid waste landfill
- 110 acres of active disposal cells
 - Cells A, B & C



Matt Morales, P.E.,
Client: Project Manager,
Cinder Lake Landfill

Technical Advisor: Dr. Bridget Bero,
NAU Professor,
CENE 476

Stakeholders: Customers of Cinder
Lake Landfill
City of Flagstaff

Project Description

Create more space for future waste by re-sequencing Cell D that will include a portion of Cell C and the South Thumb

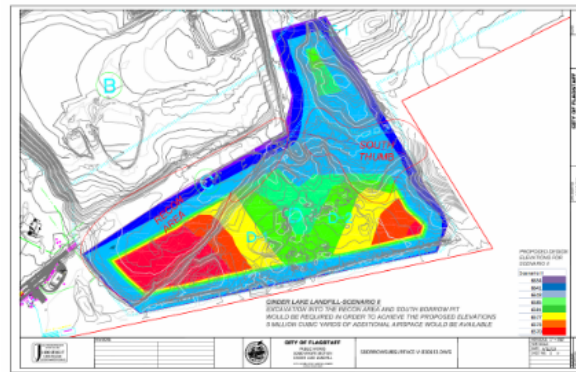


Figure 2: AutoCAD rendition of Cell D, produced by Cinder Lake Landfill

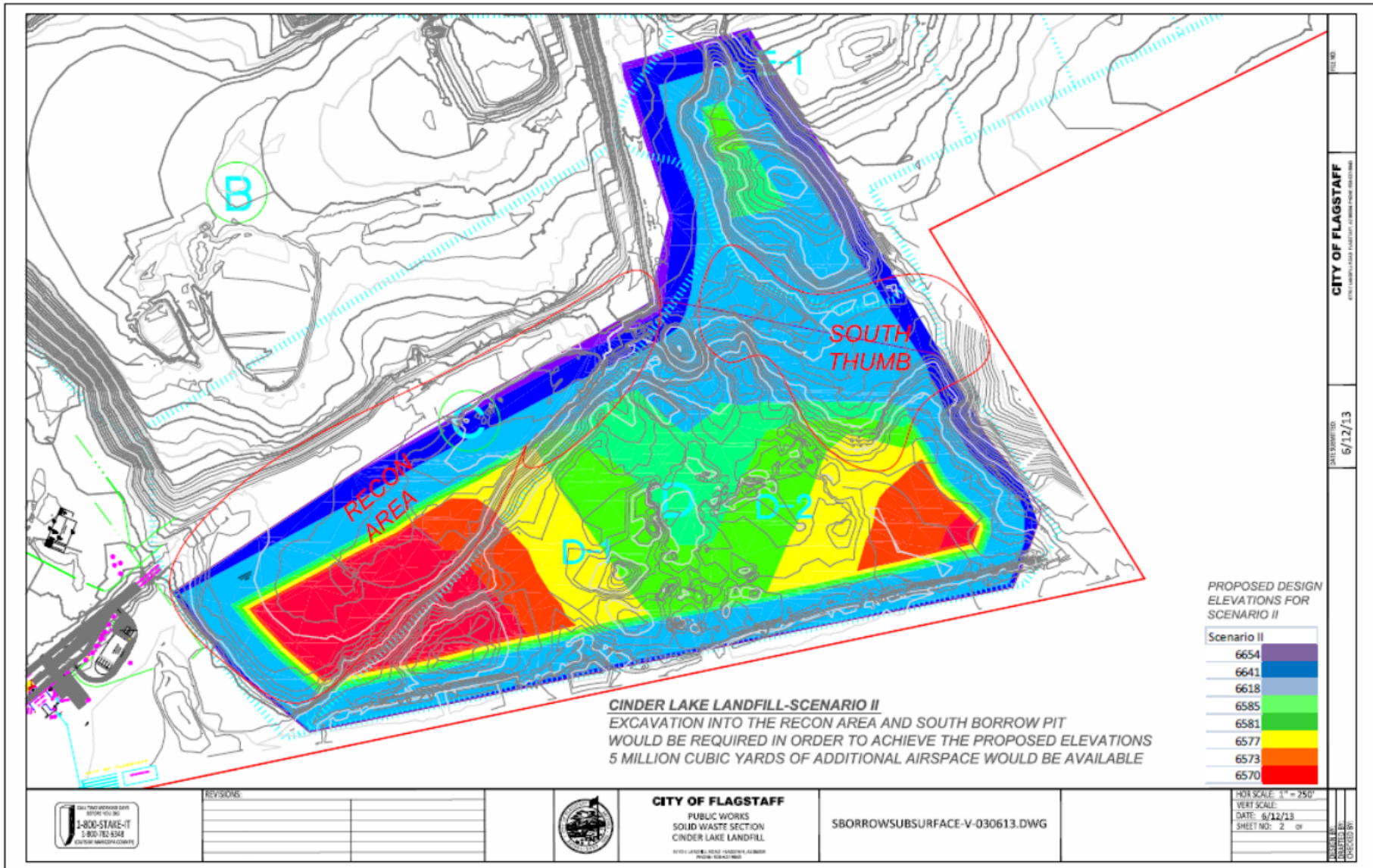


Figure 2: AutoCAD rendition of Cell D, produced by Cinder Lake Landfill

Project Statement

Cinder Lake Landfill requires a plan for landfill mining and excavation to achieve the design of the future Cell D.



Challenges

Mining hazardous waste

Mining unknown materials



Scope of Services

Task 1

Literature Review

Impacts

Environmental & Customers of Landfill

Regulations

ADEQ, CFRs, OSHA, etc.

State of the Art Technical Review

Books, Journals, Reports

Task 2

Landfill Mining

Staging



Processing

Stagging



Figure 3: An example of cement and other materials that need to be sorted, 9/18/13. Photograph taken by: Shayla Woodhouse

Processing

Task 3

Excavation

Staging



Stagging





Figure 4: Current condition of Cell D, 9/18/13.
Photograph taken by: Shayla Woodhouse



Figure 5: Large boulders that need to be excavated, 9/18/13. Photograph by: Shayla Woodhouse

Task 4

Health & Safety Plan

Monitoring

Gas monitoring & air quality

Safety

Task 5

Cost Estimate

Landfill mining/excavation



Cost Analysis

Task 6

Documentation

50% Design Report and Presentation

Final Design Report and Presentation

Website



Exclusions

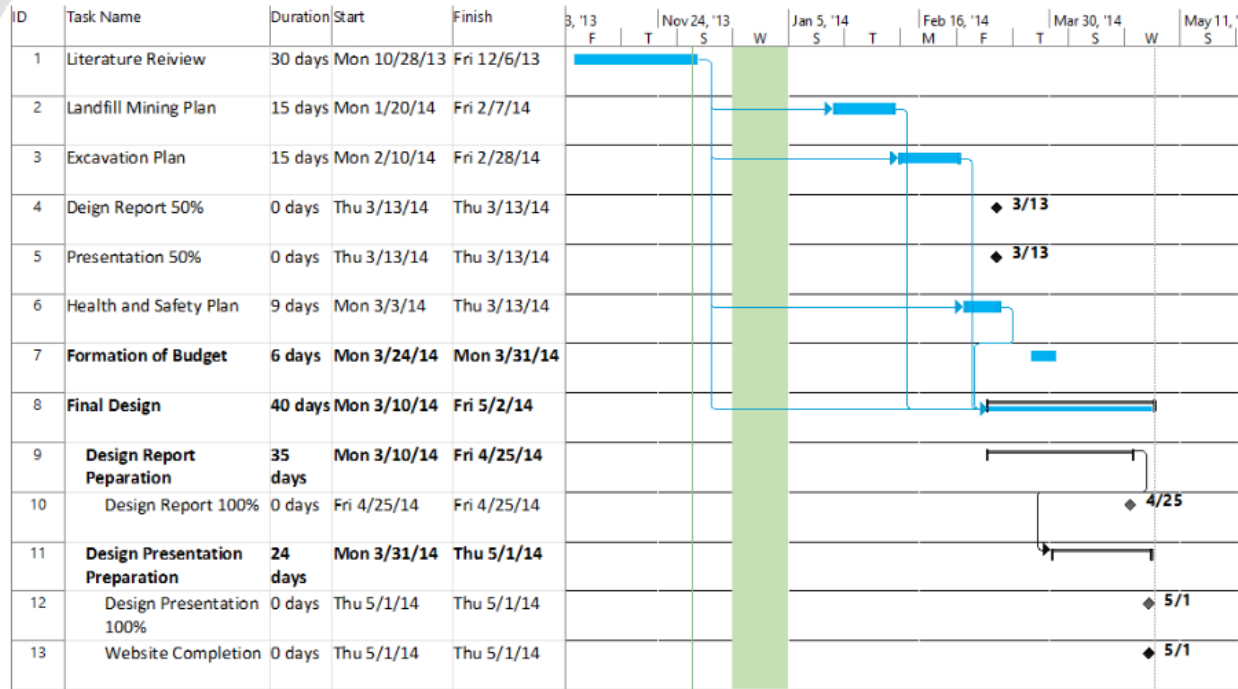
Daily cover

Excavation processing for Cell D

Drafting



Project Schedule



ID	Task Name	Duration	Start	Finish	3, '13	Nov 24, '13	Jan 5, '14	Feb 16, '14	Mar 30, '14	May 11, '14							
					F	T	S	W	S	T	M	F	T	S	W	S	
1	Literature Reiview	30 days	Mon 10/28/13	Fri 12/6/13	[Task Bar]												
2	Landfill Mining Plan	15 days	Mon 1/20/14	Fri 2/7/14													
3	Excavation Plan	15 days	Mon 2/10/14	Fri 2/28/14													
4	Deign Report 50%	0 days	Thu 3/13/14	Thu 3/13/14													
5	Presentation 50%	0 days	Thu 3/13/14	Thu 3/13/14													
6	Health and Safety Plan	9 days	Mon 3/3/14	Thu 3/13/14													
7	Formation of Budget	6 days	Mon 3/24/14	Mon 3/31/14													
8	Final Design	40 days	Mon 3/10/14	Fri 5/2/14													
9	Design Report Peparation	35 days	Mon 3/10/14	Fri 4/25/14													
10	Design Report 100%	0 days	Fri 4/25/14	Fri 4/25/14													
11	Design Presentation Preparation	24 days	Mon 3/31/14	Thu 5/1/14													
12	Design Presentation 100%	0 days	Thu 5/1/14	Thu 5/1/14													
13	Website Completion	0 days	Thu 5/1/14	Thu 5/1/14													

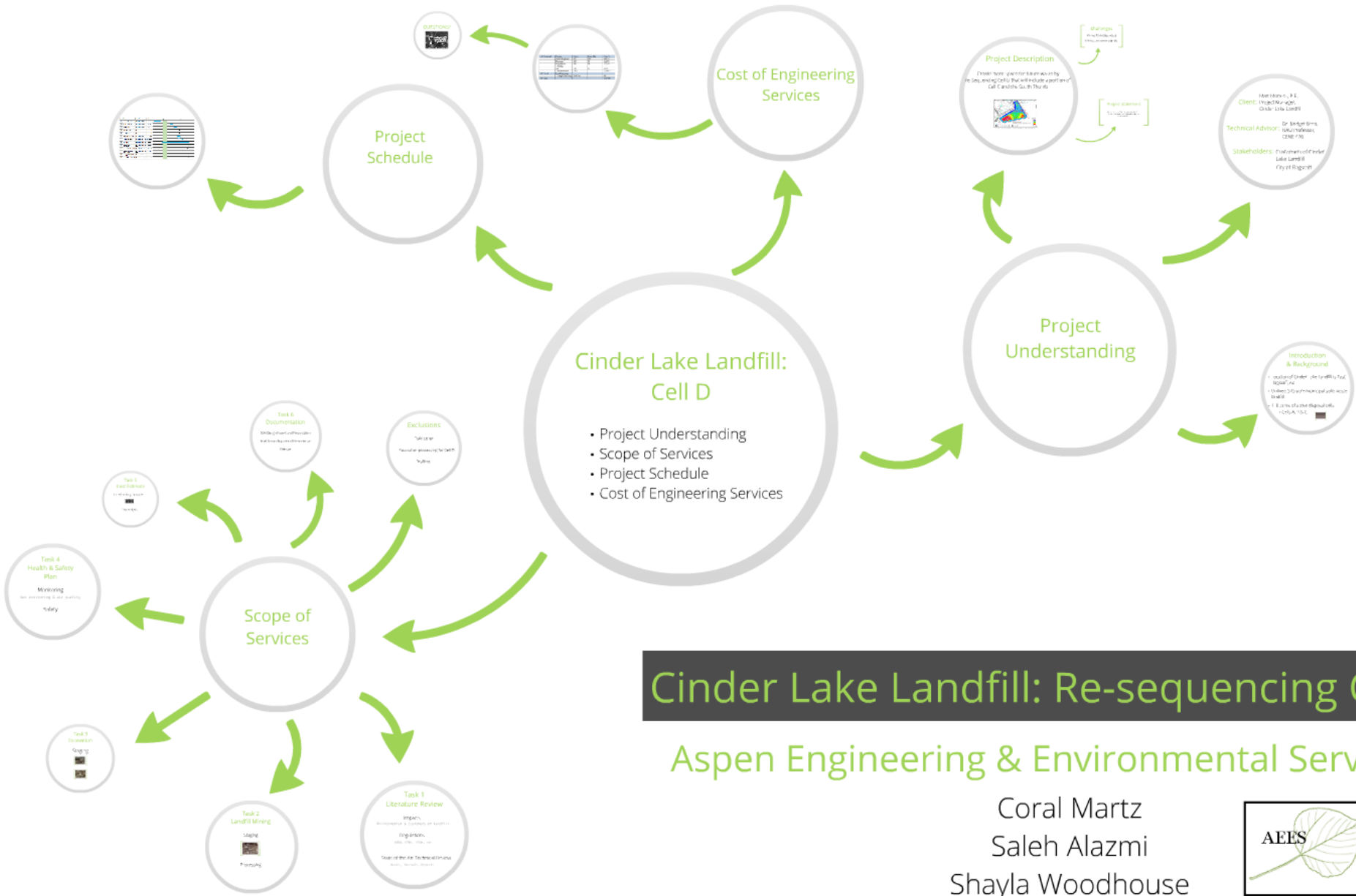
Cost of Engineering Services



1.0 Personnel	Person	Hours	Rate, \$/hr	Cost, \$
	Senior Engineer	472	104	48,935
	Engineer	600	69	41,290
	Engineer in Training	360	48	17,250
	AA	120	34	4,138
	Total Personnel	1552		111,612
2.0 Travel	Local Meetings			
	12 mtgs*20mi/mtg	\$0.40/mi		96
3.0 Total				111,708

QUESTIONS?





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