MINING AND RECLAMATION PROPOSAL

BURROUGHS MATERIALS CORPORATION
SPRINGFIELD TOWNSHIP SITE

PLANNING COMMISSION PRESENTATION

MAY 27, 2025

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GEOLOGY OF SOUTHEAST MICHIGAN

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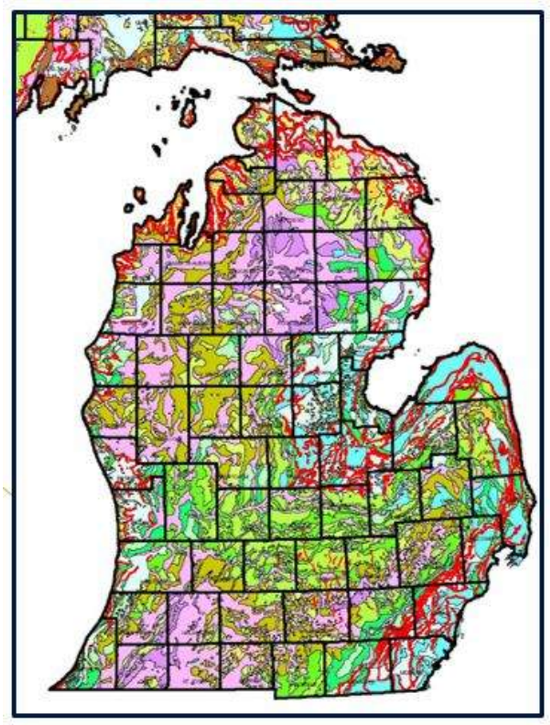
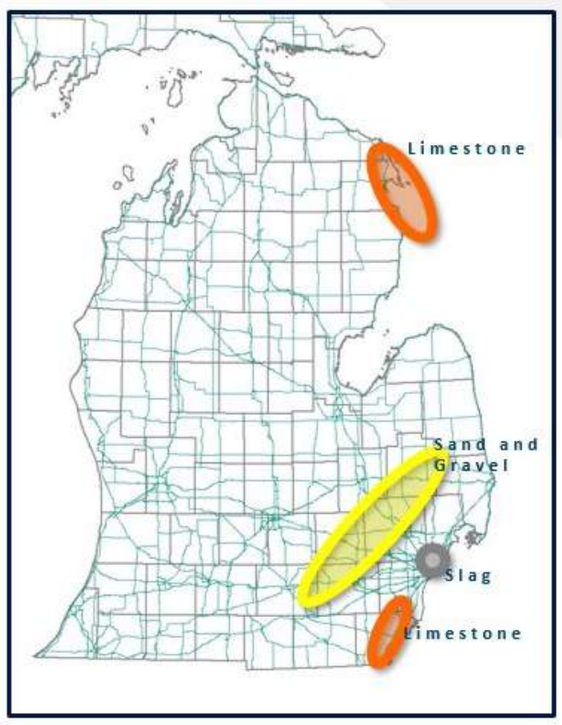
GEOLOGY OF SOUTHEAST MICHIGAN

WHERE IS SAND AND GRAVEL FOUND?

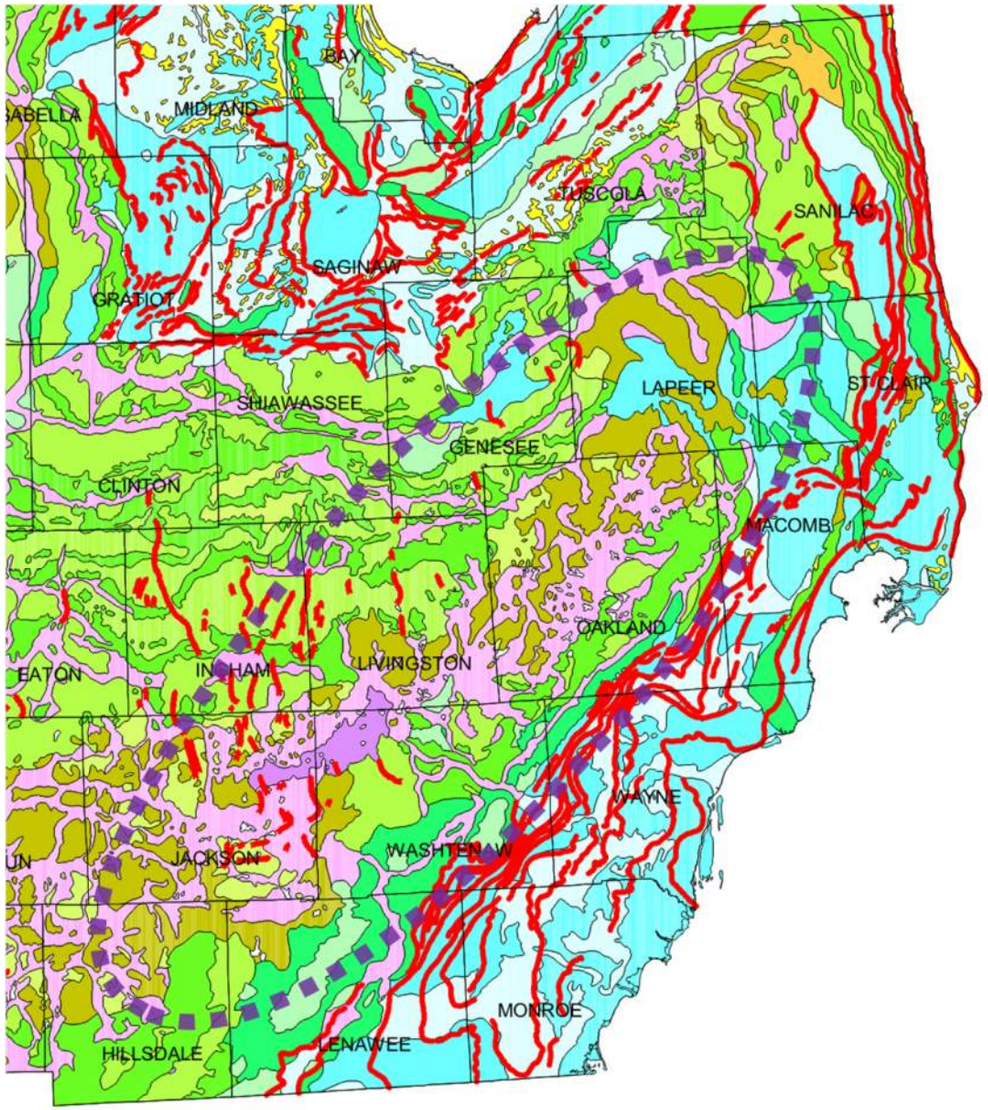
Marketable sand and gravel is typically found in coarse textured end moraines and associated outwash areas

“Even if sources of (sand and gravel) aggregate are present, they must meet certain quality parameters before they can be put to use” (Langer 2002)





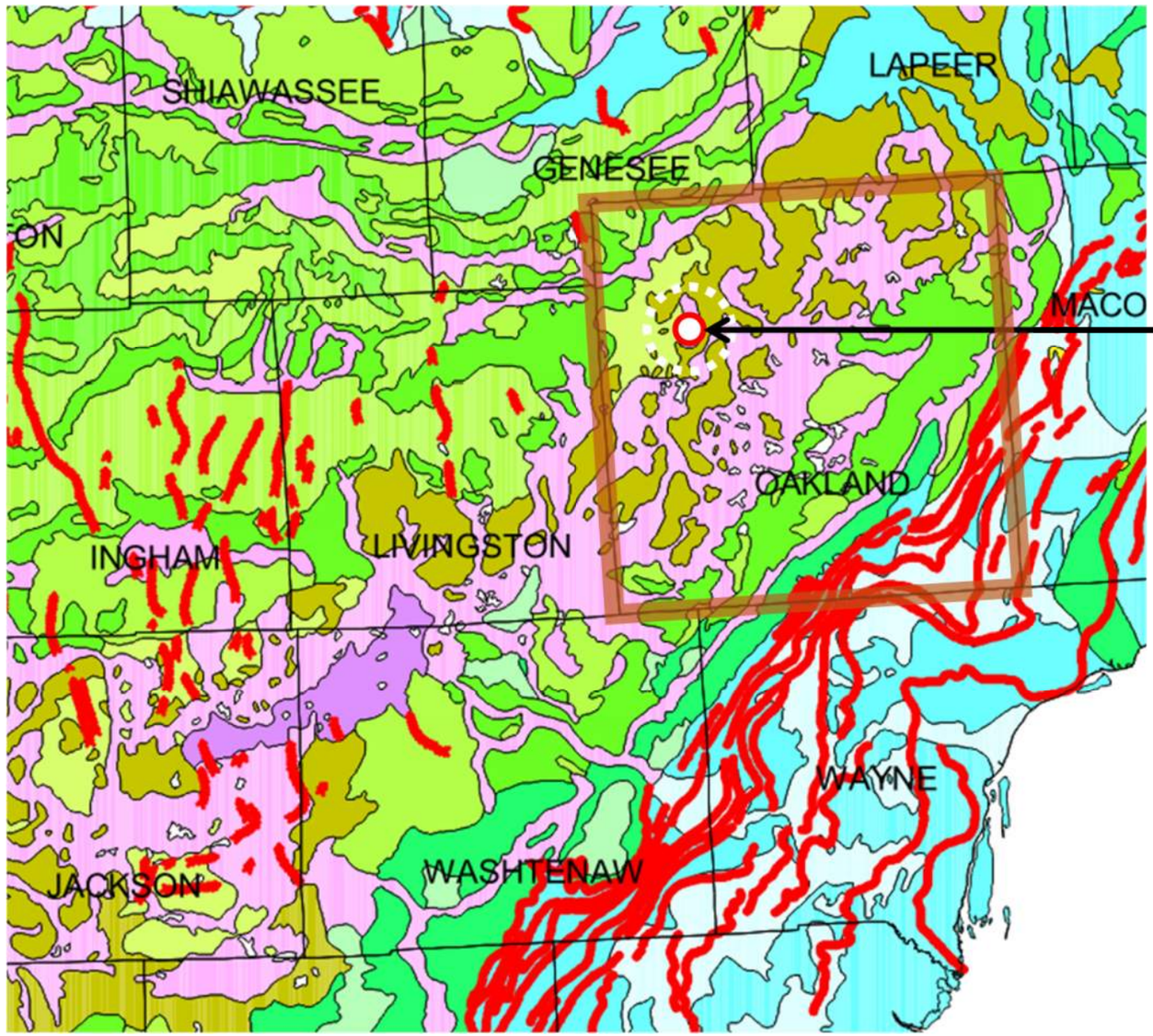
GEOLOGY OF SOUTHEAST MICHIGAN



- Peat and muck
- Postglacial alluvium
- Dune sand
- Lacustrine clay and silt
- Lacustrine sand and gravel
- Glacial outwash sand and gravel and postglacial alluvium
- Ice-contact outwash sand and gravel
- Fine-textured glacial till
- End moraines of fine-textured till
- Medium-textured glacial till
- End moraines of medium-textured till
- Coarse-textured glacial till
- End moraines of coarse-textured till
- Thin to discontinuous glacial till over bedrock
- Artificial fill
- Exposed bedrock surfaces
- Water

- Drumlins
- Eskers
- Shorelines
- Sinkholes
- Striations/Grooves

PROPOSED MINING SITE



SPRINGFIELD TOWNSHIP
(Field Site)

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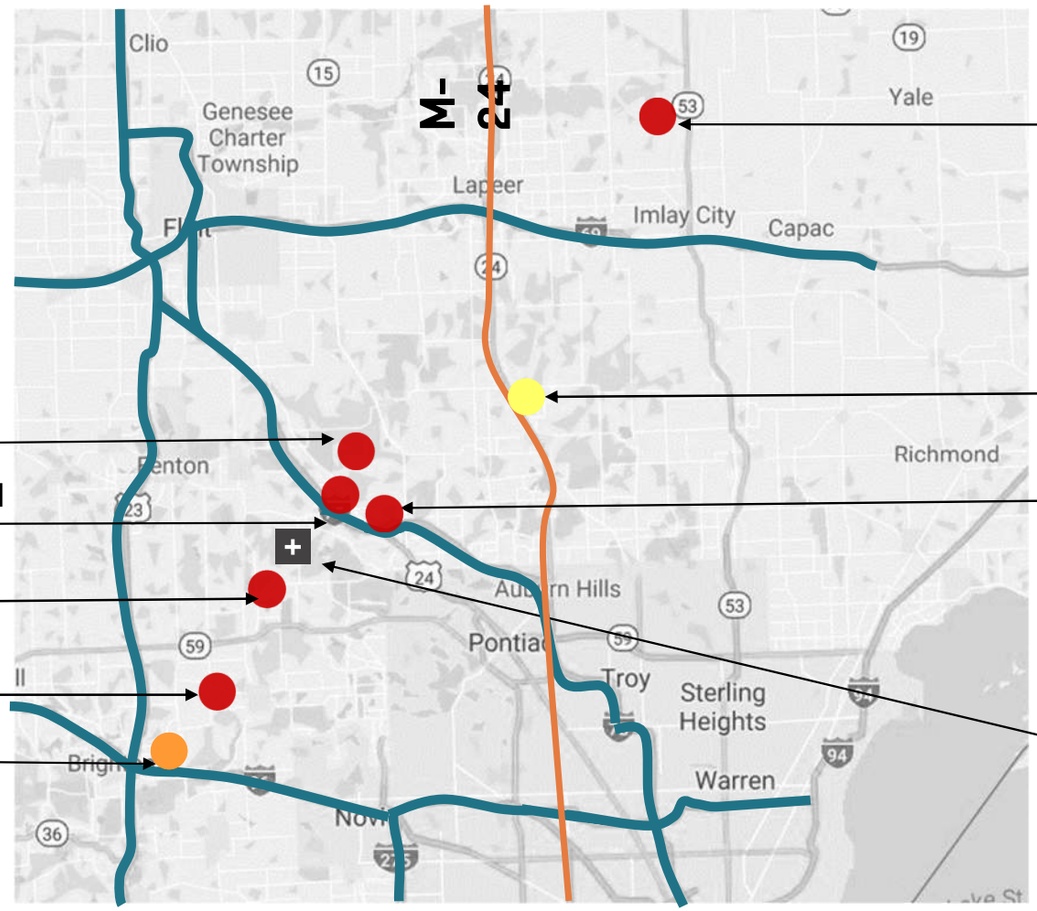
STATUS OF EXISTING BMC / AFFILIATED OPERATIONS

Remaining Life

- 1 – 5 Years
- 6-10 Years
- 11-15 Years



Note: Based on current market, permits, and equipment.

SAND AND GRAVEL PRODUCTS

Typical Products

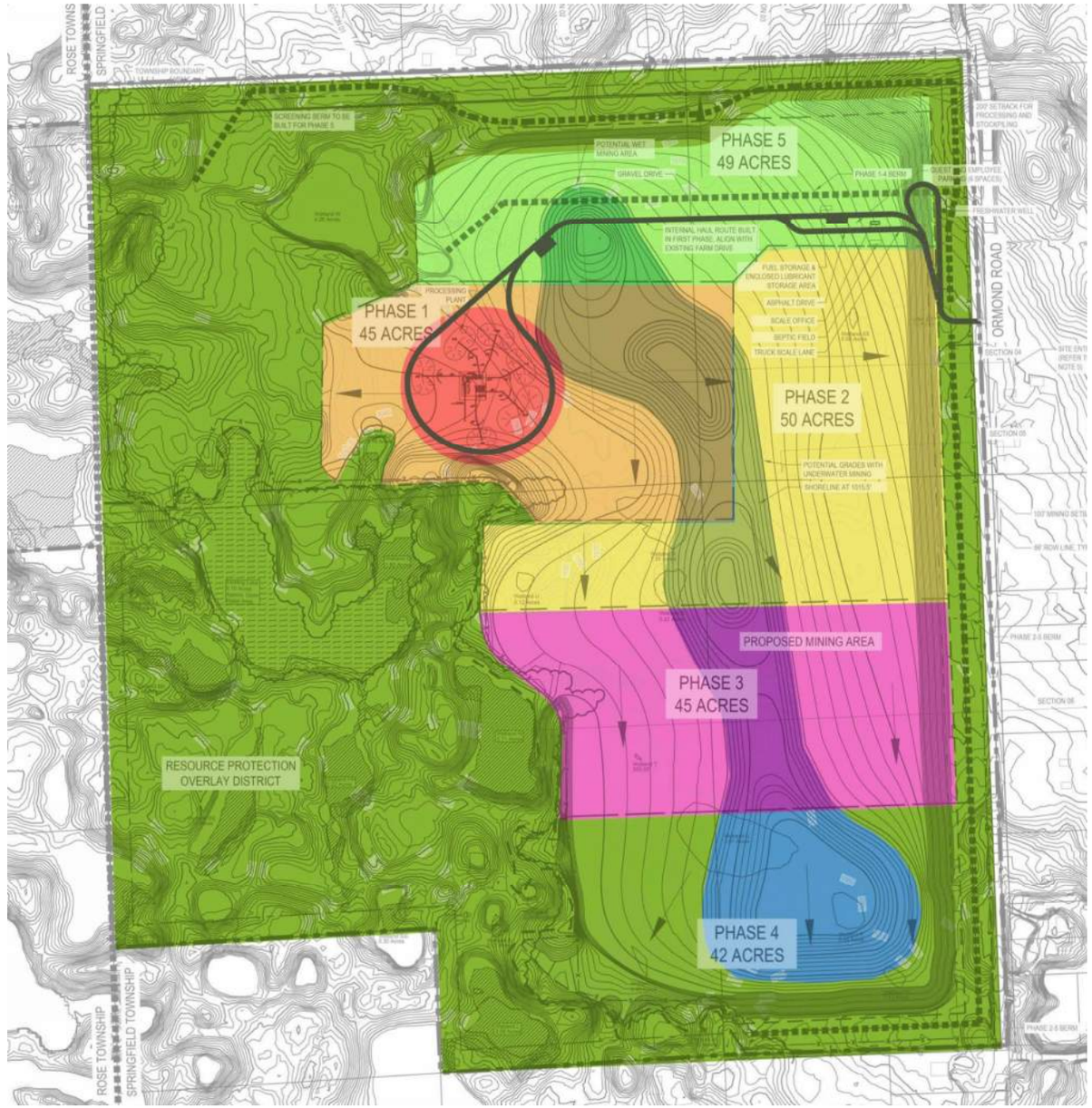
- 2NS Concrete Sand
- 6A and 6AC stone
- Pea stone
- Road Gravel
- Asphalt Gravel
- Fill Sand

2NS Concrete Sand is the majority of the product sold by volume

PROPOSED SPECIAL LAND USE

BURROUGHS MATERIALS CORPORATION

- Mine 238 acres of a 422-acre site in five phases over a 20-year period, subject to market and site conditions
- Mine and Reclaim the site in a logical sequence
- Shape the site for productive re-use, post mining



PLANNING PROCESS AND THE PROPOSED OPERATION

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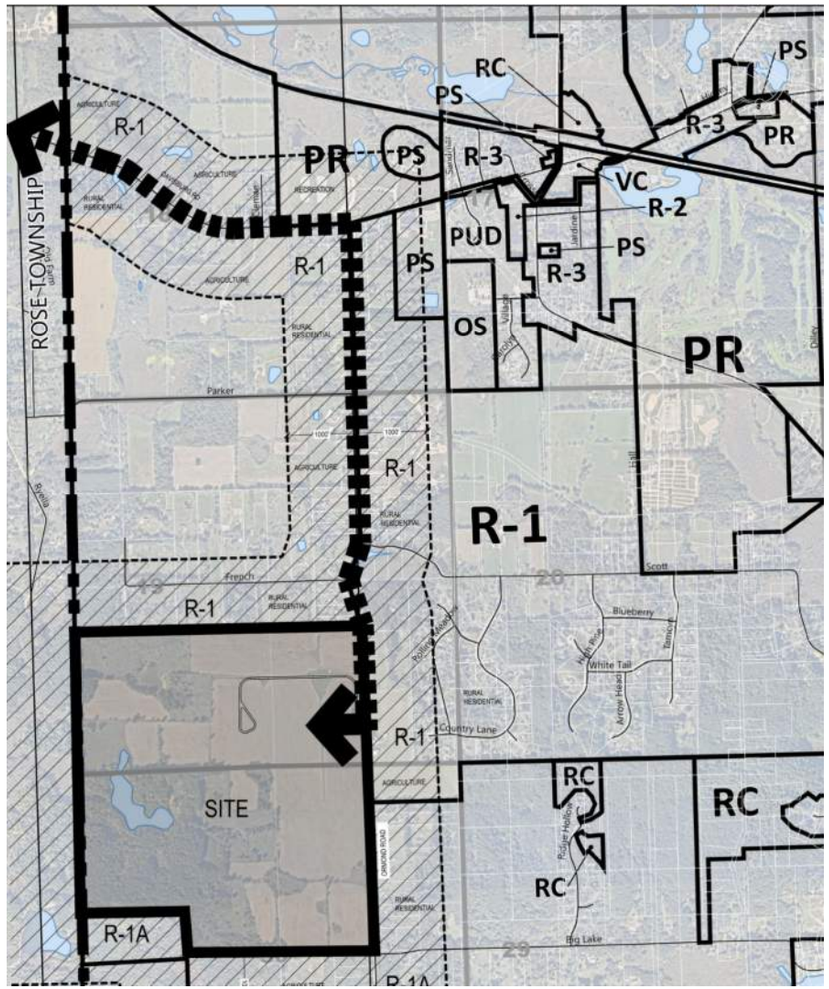
UNDERSTAND THE SITE AND COMMUNITY

STEP ONE: UNDERSTANDING THE SITE AND GEOLOGY

INITIAL INVESTIGATIONS

- Natural Features Inventory and field verifying wetlands and Natural Features Overlay boundary
- Hydrogeological Assessment investigating groundwater conditions
- Traffic Impact Assessment and determining best haul route
- Assessment of local master plan, land uses, and ordinances



Proposed Haul Route: Ormond Road north to Davisburg Road west

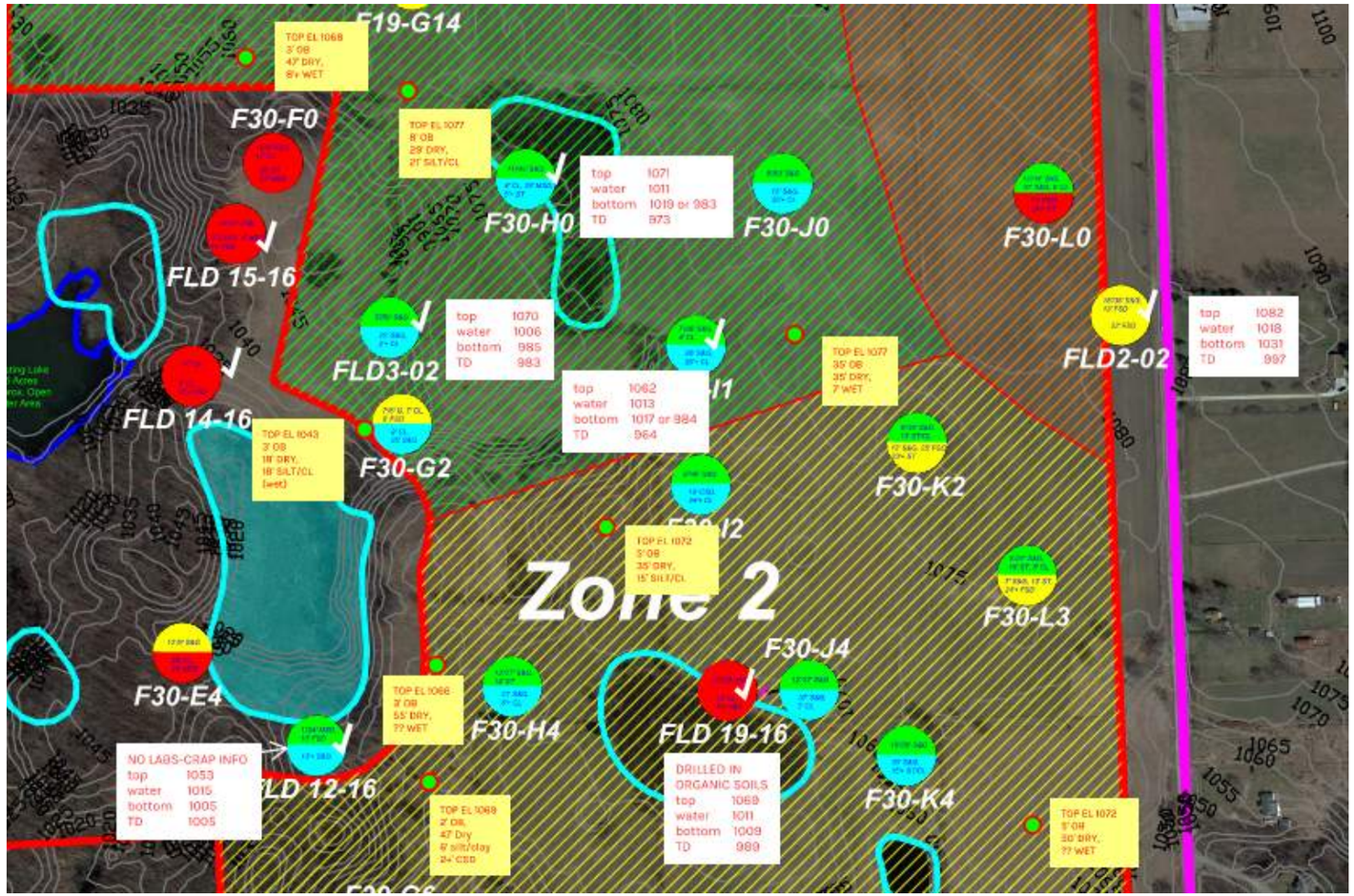
UNDERSTAND THE GEOLOGY

STEP ONE: UNDERSTANDING THE SITE AND GEOLOGY

INITIAL INVESTIGATIONS

Included 57 borings and 25 wells at Springfield, looking at-

- Quality of Sand and Gravel
- Depth and gradient of water table
- Thickness of overburden relative to reserves
- Base of reserves relative to water table



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UNDERSTAND THE GEOLOGY

Drilling Co.	ECL	Property	Field	Hole #	F19-G13		
Date	4/4/2001	Parcel	F19	Sheet 1	Of	2	
Start Time	2:00 PM	Hole Location	Northern portion	Surface Elev.	1073'		
Finish Time	10:15 AM 4/5/2001	Logged By	Tim Higbee	Water Depth	61.5'		
Total Depth	97'	Drill Method	Auger				

Comments:

Graphical log Depth	Litho.	Description	From (feet)	To (feet)	Interval Thickness	Sample Interval	Lab Analysis LBW	FM	%Gr.	Note
2		Yellowish brown silty and sandy firm clay with abundant gravel.	Zero	2	2					
4		Yellow medium to coarse sand with 45% gravel. Maximum size 3", avg. 1/2".	2	17	15	2 to 17	5.5	2.34	47.3	S&G
18		Brown coarse sand with 40% gravel. Maximum size 2", avg. 1/2".	17	27	10	17 to 27	5.1	2.67	38.1	S&G
28		Yellow fine sand with 10% fine gravel.	27	29	2	27 to 29	5.6	1.79	11	FSD
30		Yellow medium to coarse sand with 40% gravel. Maximum size 1.5", avg. 1/4".	29	34	5	29 to 34	5.7	2.7	44	S&G
36		Light yellow very fine sand to silt with 15% fine gravel.	34	37	3	34 to 37	7.1	1.34	17	ST
38		Brown medium sand with 20% fine gravel.	37	42.5	5.5	37 to 42.5	5.9	2.35	28.2	S&G
44		Light yellow fine sand with some thin bands of silt.	42.5	52	9.5	42.5 to 52	13.1	1.13	5.5	ST

Limited Overburden

Great Reserves- consistent FM, low LBW, high gravel content,

Questionable Reserves

Interburden (removable in the dry)

Water Table

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Comments:

Graphical log Depth	Litho.	Description	From (feet)	To (feet)	Interval Thickness	Sample Interval	Lab Analysis LBW	FM	%Gr.	Note
52		Light yellow fine sand with some thin bands of silt.	42.5	52	9.5	42.5 to 52	13.1	1.13	5.5	ST
54		Yellow medium sand with 20% fine gravel and some thin bands of gray coarse sand with 40% fine gravel.	52	61.5	9.5	52 to 61.5	5.5	2.56	30.6	S&G
62		Yellow to brown medium sand with occasional fine gravel.	61.5	64	2.5	61.5 to 64	5.4	2.31	6.1	MSD
66		Grayish brown coarse sand with 20% fine gravel.	64	72	8	64 to 72	3.4	2.97	23.2	S&G
74		Brown to light yellow fine sand with occasional thin bands of medium sand and fine gravel.	72	84	12	72 to 84	8.1	1.89	7.9	FSD
86		Gray coarse sand with 25% fine gravel.	84	97	13	84 to 97	4.4	2.77	21.5	S&G
96		T.D. 97'								

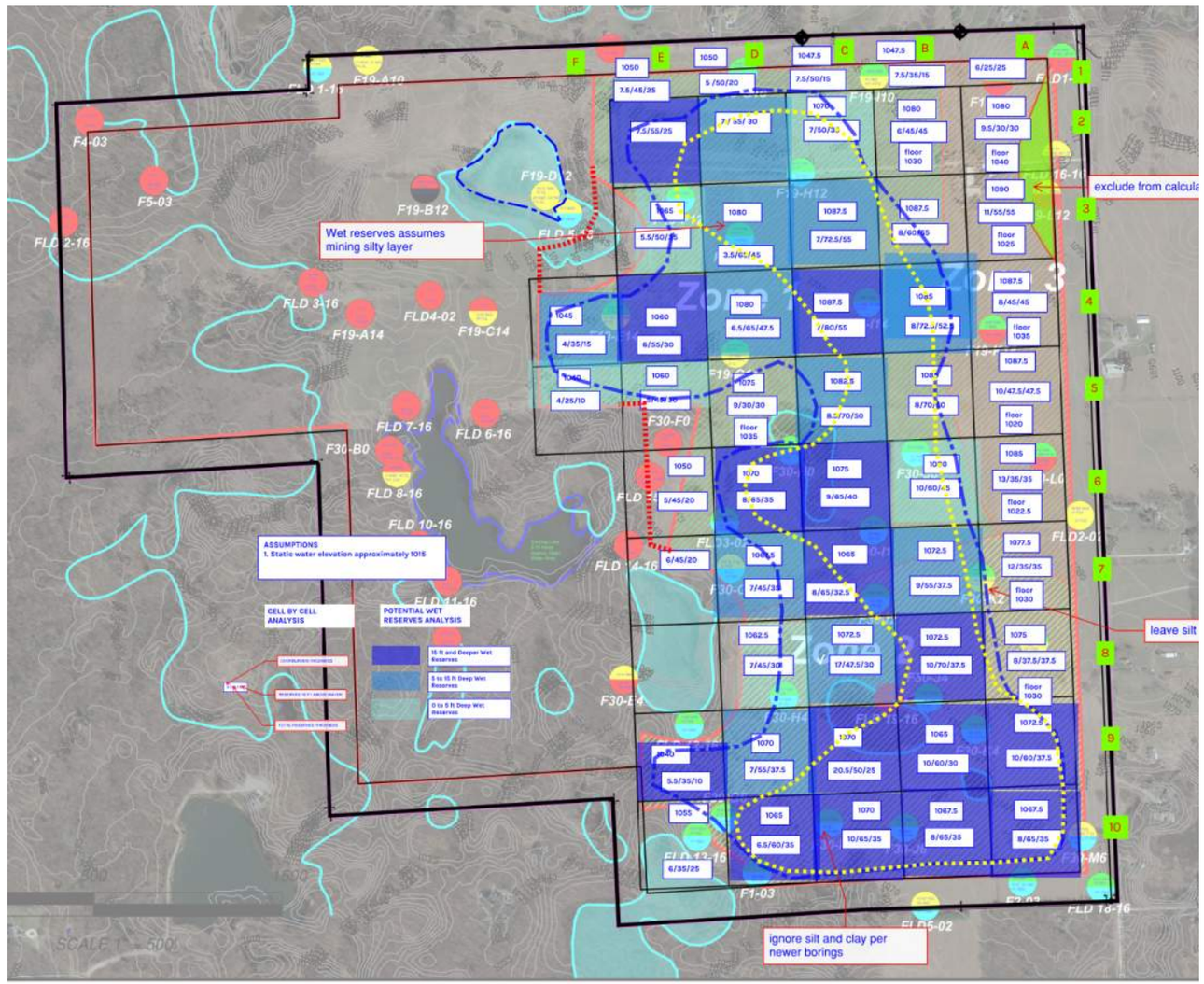
RESULTS FOR SPRINGFIELD SITE

STEP ONE: UNDERSTANDING THE SITE AND GEOLOGY

GEOLOGIC FRAMEWORK

1. Establish pit bottom elevation and shape
2. Quantify overburden and minable reserves by area
3. Estimate OB required for basic reclamation

Abundant, quality sand and gravel deposits, however, are not equally distributed across the state and are not always located close to population centers where demand is the greatest. (MDNR, 2017)



UNDERSTAND BASIC MINING CONDITIONS

STEP TWO: OPERATIONS PLANNING

REGULATORY FRAMEWORK

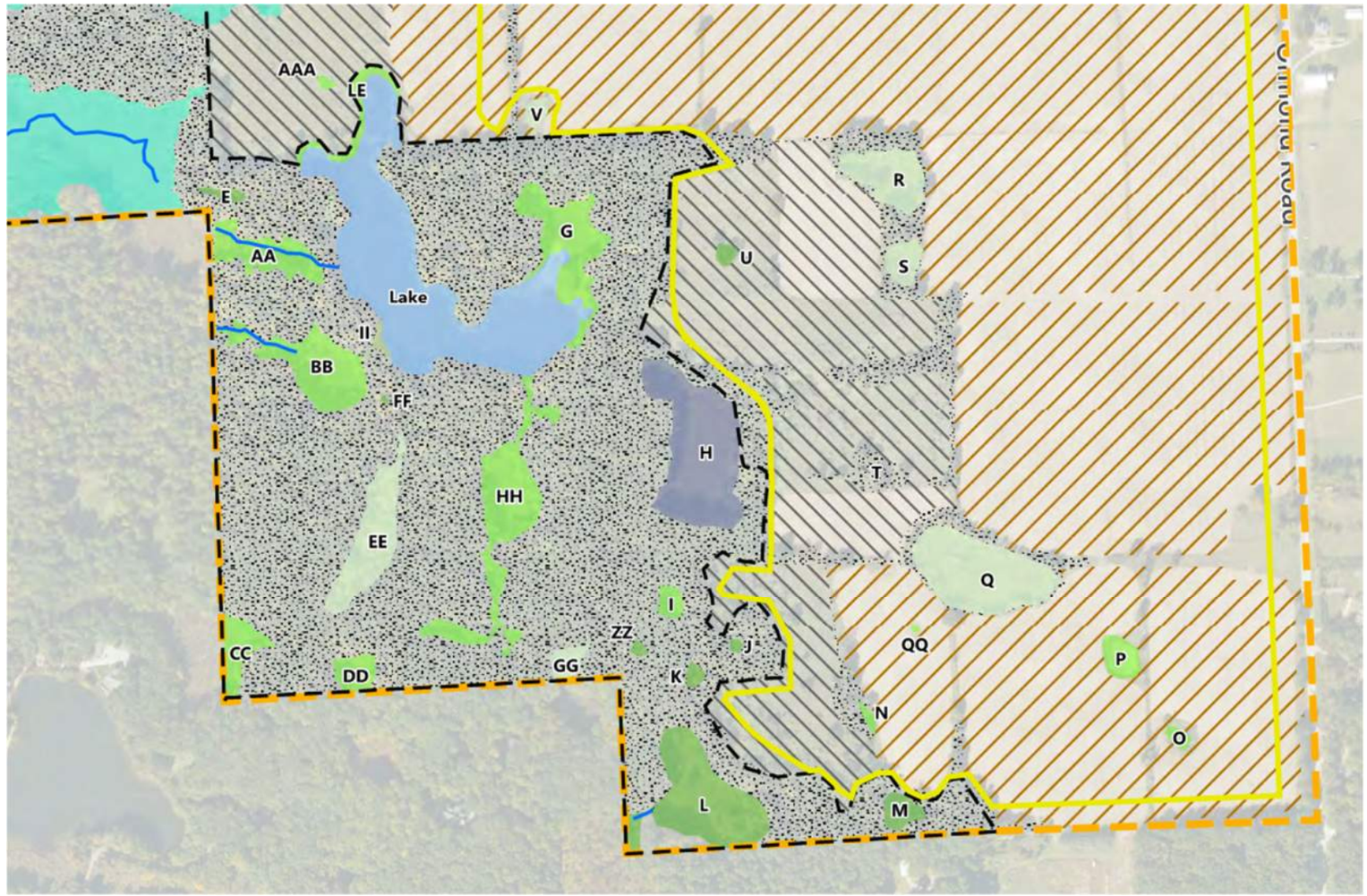
- Mining setbacks from roads, property lines, and residential homes
- Processing equipment setbacks
- Natural features setbacks
- Screening and fencing
- Concurrent Reclamation

UNDERSTAND BASIC MINING CONDITIONS

STEP TWO: OPERATIONS PLANNING

Stewardship Goals

- Protect natural resources as a community and natural asset for the future
- Conduct our operations with integrity
- Shape the land through mining and operations to create re-use opportunities

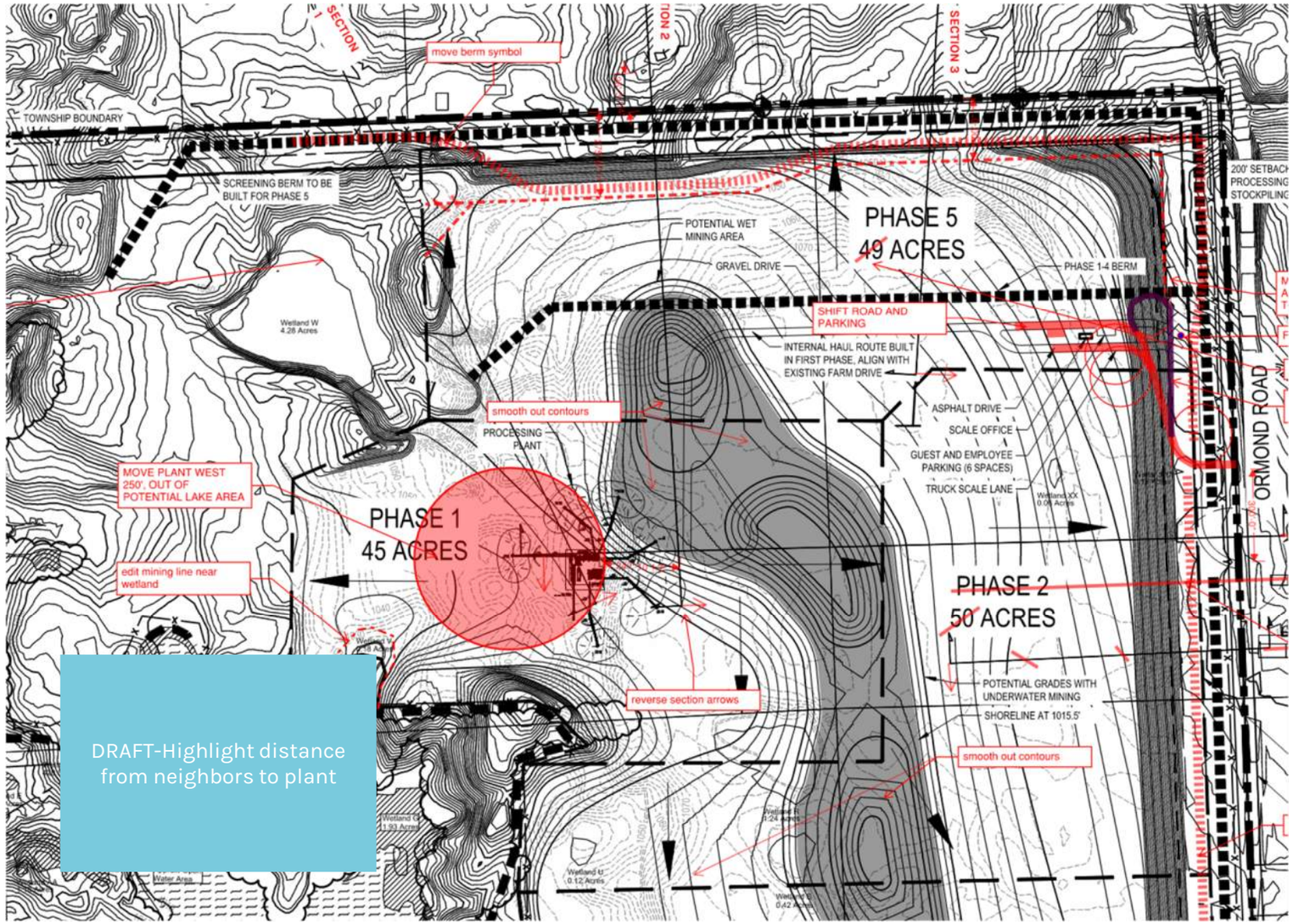


MINING OPERATIONS PLAN

STEP TWO: OPERATIONS PLANNING

<u>LOCATE PLANT,</u>
considering-

- Isolation from neighbors
- Elevation and screening potential
- Space requirements
- Plant installation and initial mining phase and berm building

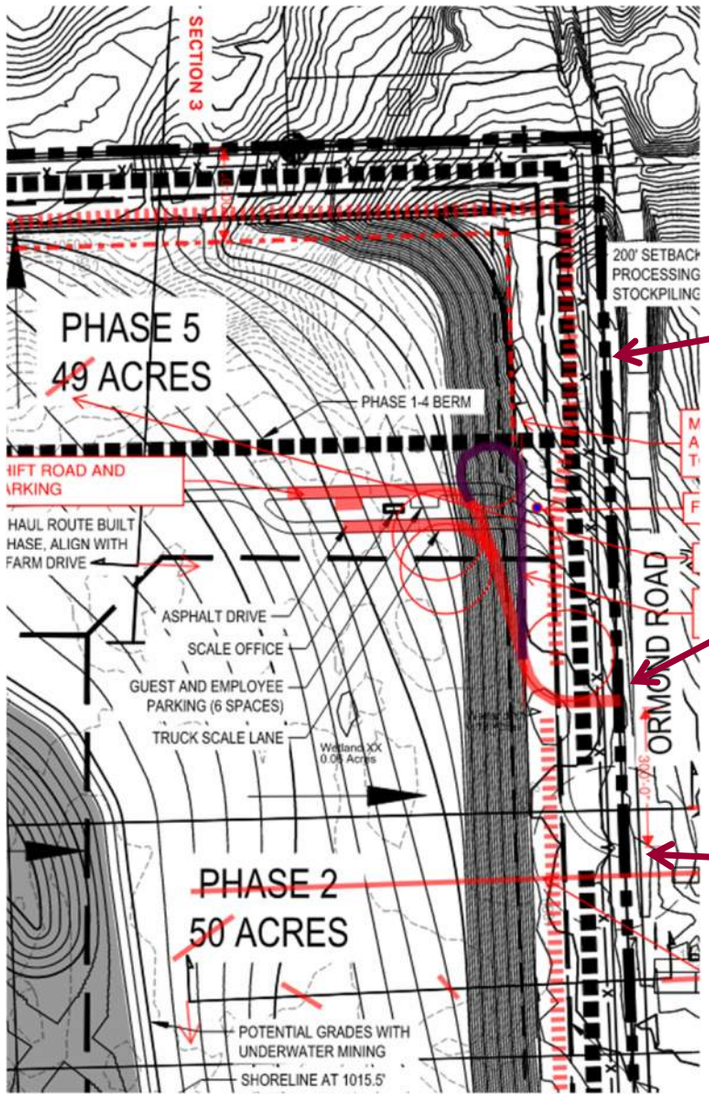


MINING OPERATIONS PLAN

STEP TWO: OPERATIONS PLANNING

<u>LOCATE SITE ACCESS,</u>
considering-

- Sight distance
- Condition of adjacent roads
- Adjacent neighbors
- Proximity to suitable road network



+/- 1,000 feet of sight distance (500 feet required)

Site entry with Ormond Road improvements

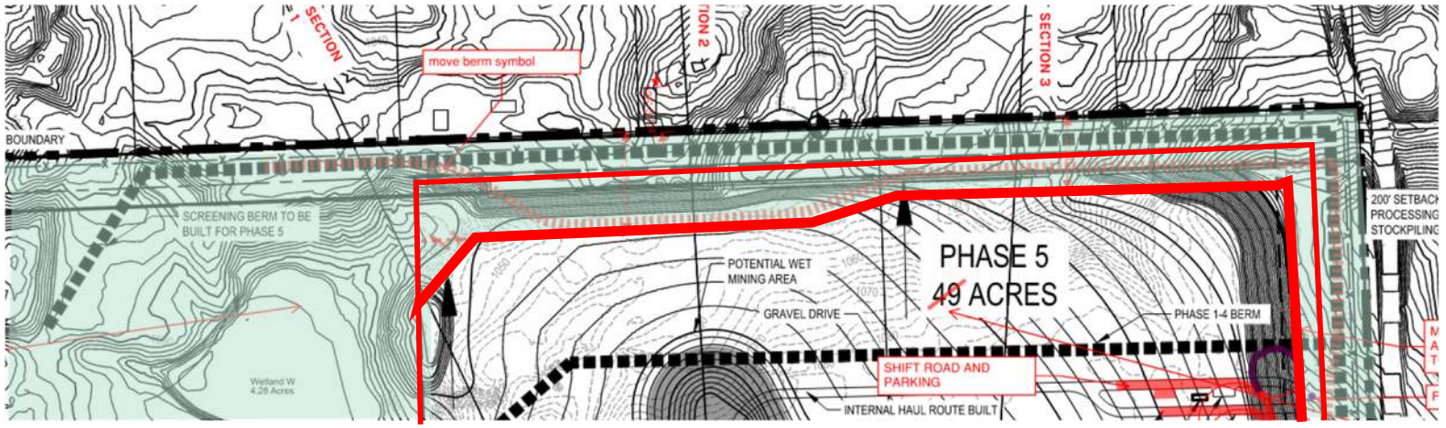
Closest neighbor's driveway 300 ft to south

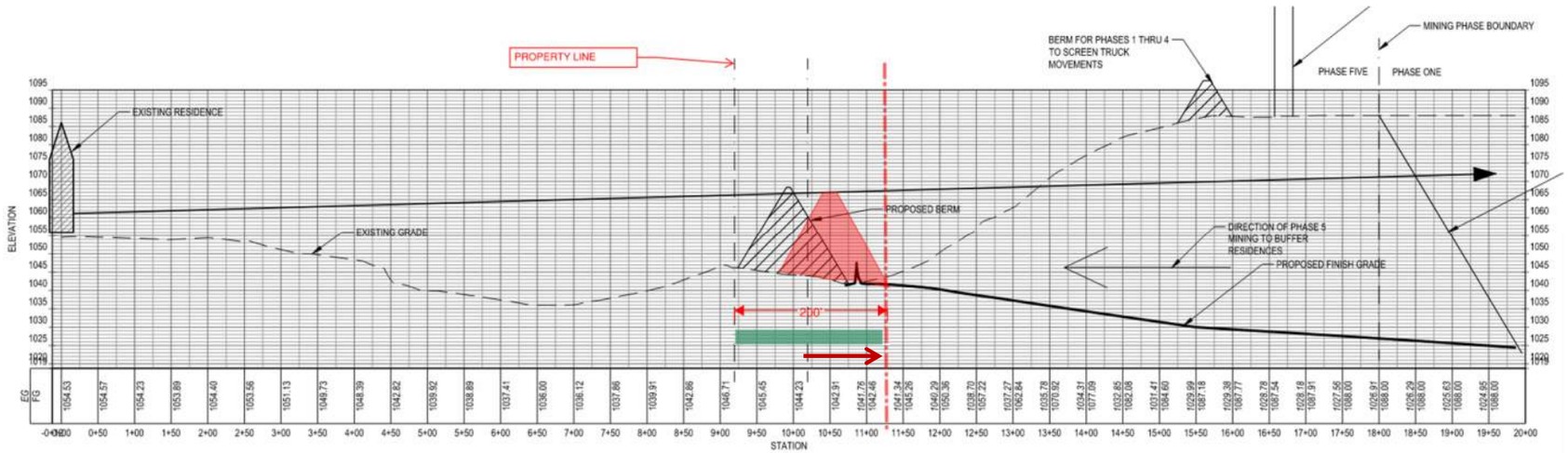
MINING OPERATIONS PLAN

STEP TWO: OPERATIONS PLANNING

PLAN SETBACKS AND BERMS, considering-

- Proximity and density of homes
- View from adjacent roads
- Balancing effective screening and rural character



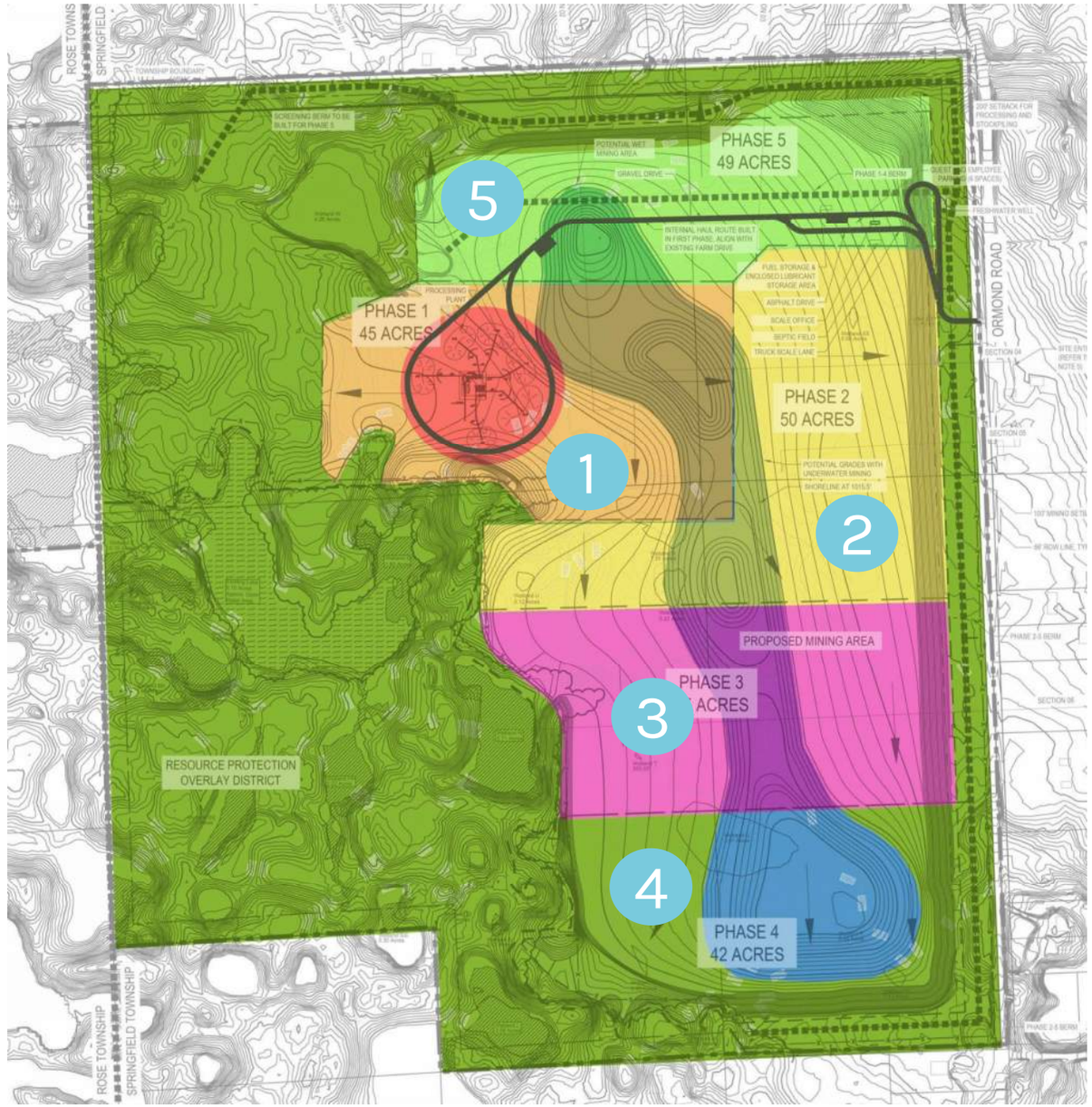


MINING OPERATIONS PLAN

STEP TWO: OPERATIONS PLANNING

ESTABLISH SEQUENCE OF MINING AND RECLAMATION,
considering-

- Setting plant at lower elevation
- Screening and landscaping
- Direction of mining to use topography for sound mitigation
- Moving soils to efficiently reclaim site



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MINING OPERATIONS PLAN

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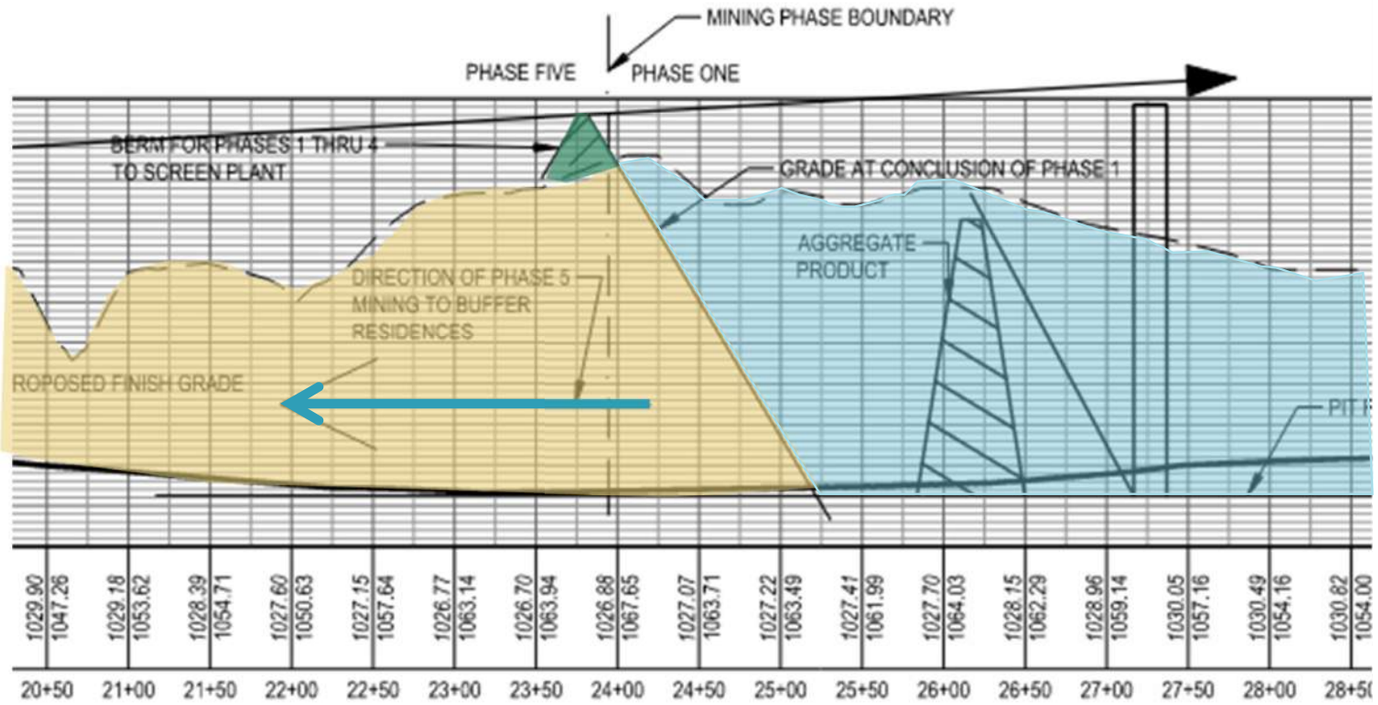


DEVELOP RECLAMATION CONCEPT PLAN

STEP THREE: RECLAMATION CONCEPT

DETERMINE EARTHMOVING STRATEGY-

- Start with OB needed to reclaim slopes
- Balancing overburden for pit floor with quantity available

Consider regulatory requirements

- Restored maximum slope for uplands
- Below water reclamation slopes and water depth
- No imported fill

DEVELOP RECLAMATION CONCEPT PLAN

STEP THREE: RECLAMATION PLANNING

EXPLORE FUTURE LAND USE CONCEPTS

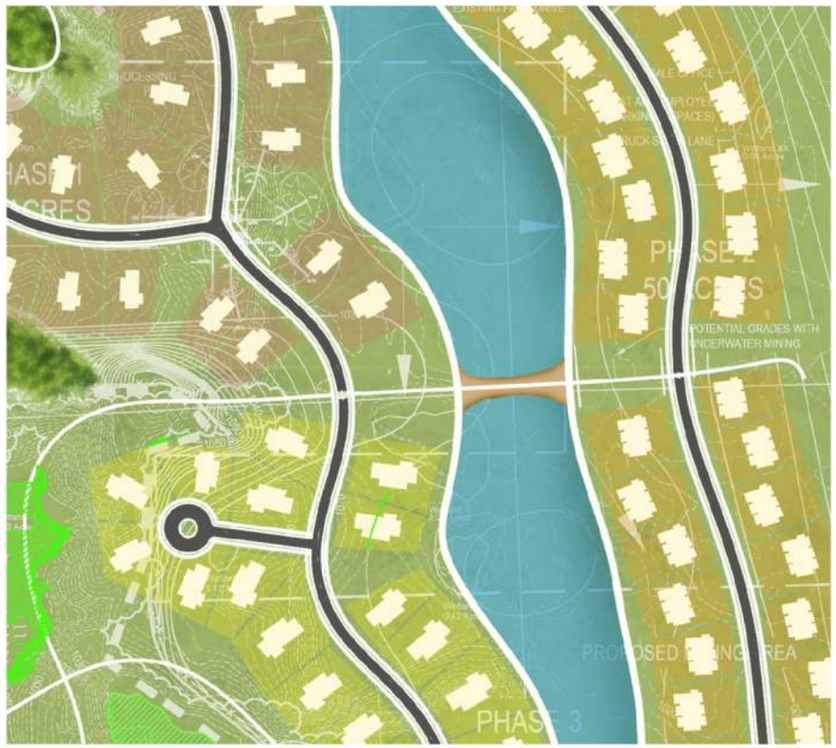
- Consider potential redevelopment scenarios and identify common requirements
- Set Mining/Reclamation parameters to maximize future flexibility for development of the site
- Recognize that the future community development goals will evolve.

DEVELOP RECLAMATION CONCEPT PLAN

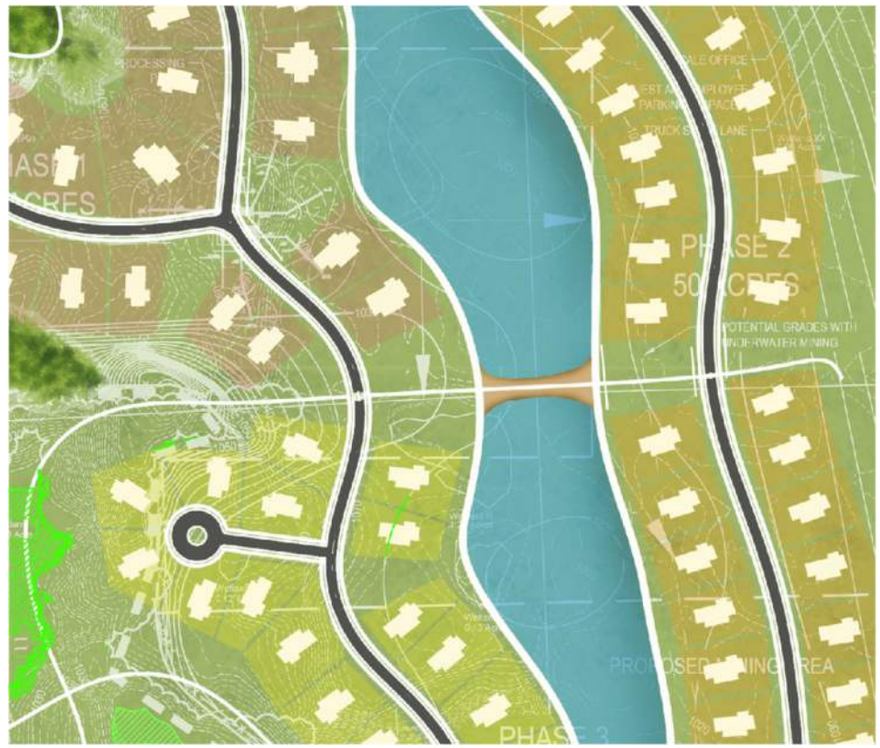
STEP THREE: RECLAMATION PLANNING

EXPLORE FUTURE LAND USE CONCEPTS

It is too early to tell how the site may be developed; however, the mining and reclamation can provide a site for a range of development types.



Plan with mix of housing types



Plan with large lot housing type

SITE ACTIVITIES

STEP FOUR: IMPLEMENTATION

EXTRACTION

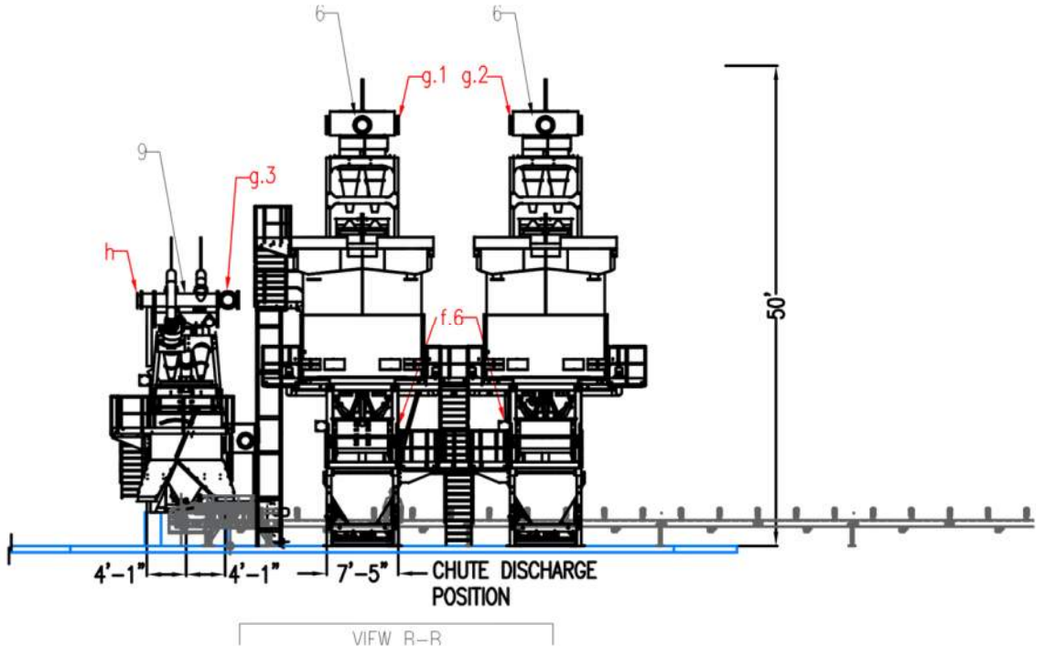
- Prepare area for mining by stripping soils.
- Excavate bank of aggregate, or
- Excavate from below water and stockpile to drain
- Load into hopper
- Transport to wash plant with conveyers and/or trucks

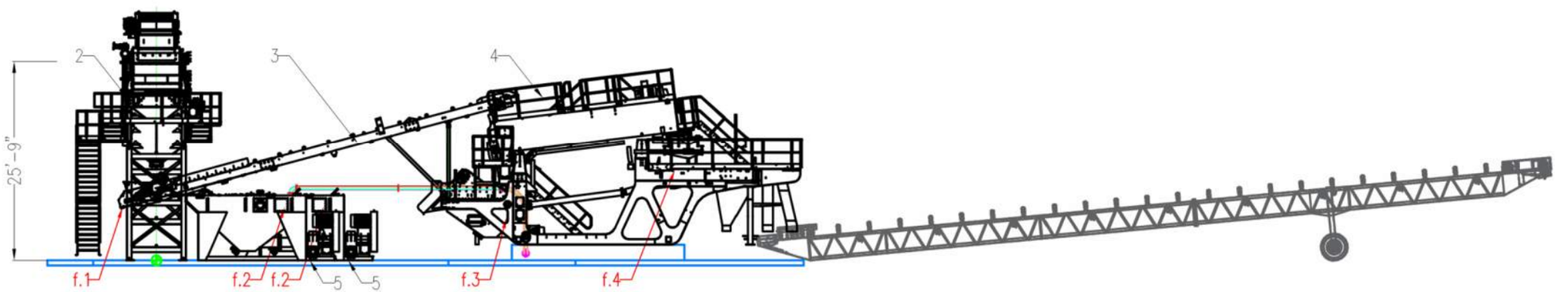
SITE ACTIVITIES

STEP FOUR: IMPLEMENTATION

PROCESSING

- Feed raw material into plant
- Washed with water, screened, and sorted aggregate
- Crush stone (in some cases)
- Segregate into product piles
- Load trucks





SITE ACTIVITIES

STEP FOUR: IMPLEMENTATION

RECLAIM

- Use removed soils for reclamation-pit floor, restored slopes, screening berms
- Reclaim the site on an ongoing basis to minimize exposed earth and absorb costs over time

THE PLANNING CONTINUES

STEP FOUR: IMPLEMENTATION

ANNUAL PLANNING AND PERMITTING

- Annual operations planning process to manage ongoing mining and reclamation
- Supplemental geologic studies
- Update annual permit application
- Review by township
- Site tour to confirm compliance

SUCCESS STORIES

ISLAND LAKE OF NOVI (NOVI, MICHIGAN)

SUCCESS STORIES

WATERSTONE (OXFORD, MICHIGAN)

SUCCESS STORIES

MAPLE LAKE FARMS (MILFORD, MICHIGAN)

SUCCESS STORIES

KENSINGTON RIDGE (MILFORD, MICHIGAN)

CONCLUSIONS

- Assessments of the mining operation and existing site have concluded that no serious consequences are anticipated to:
    - Regulated wetlands
    - Significant natural resources
    - Ground water level or quality
    - Traffic operations on adjacent roads

- BMC is volunteering to adhere to mining setbacks greater than regulations call for.

- The proposed mining and reclamation activity will be in conformance to relevant township regulations, including noise, airborne emissions, vibration, natural features protection, waste disposal, exterior lighting, hazardous substances, and mining related ordinances.

- No exceptions or variances are requested.

- All required state, federal, and county permits will be obtained in a timely fashion and regulations adhered to.

QUESTIONS?