



More Consideration for Woodyards

Wood Bioenergy Conference & Expo 2018



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Agenda

- Define MSE's observations from 10 years of pellet plant development
- Draw from MSE's 49 years of wood processing experience.
- Define considerations for effective wood yards
 - Wood receipt
 - Truck dumping and Conveying
 - Crane and round wood storage
 - Logline
 - Chip storage/ reclaim
- Facility photos of pelletizing and other industries
- Conclusion



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MSE's Observations – Wood Receipt

- Understand your “wood basket”
 - Available suppliers for chips, mill residuals, etc.
 - Percentage of in-woods chip suppliers vs. round log suppliers
 - Competitors for wood supply
 - Start with a plant process basis for design
 - Will it change over time?
- Plant road design is a critical step in the overall plant arrangement development.
 - Isolate truck and car traffic, eliminate pedestrian crossings
 - Minimize head-on traffic
 - Individual plant roads for pellet loadout, chips, and logs.
 - Sufficient storage/ queuing of trucks for pellet loadout, chips, and log trucks.
 - Minimum 10 truck queuing per type and 10 trucks storage between the scales and the incoming road.
 - Dedicated scales for loadout and wood receipt.
 - Inventory tracking software.



MSE's Observations – Wood Receipt Cont'd

- Install queuing area near truck unbinding racks.
- Optical or camera systems for log in QC
- Tracking for certifications



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MSE's Observations – Dumping/ Conveying

- Number of truck dumps needed.
 - Based on design basis of plant
 - Size for 10-15 minute turn cycle
 - Automate operation of truck dump – so they are “self service”
 - Use a scan card system to direct different species to appropriate storage.
 - Have phone in dump sheds to contact control room in case of issues/ emergencies.
- Conveyor design
 - Enclosed where practical
 - Less than 11 degrees – minimize the need for cleated belts
 - Size belts for necessary peak continuous flow instead of plant averages
 - Chute design is critical
 - Screening for milling and bark operations – as well as off truck dumpers.
 - Consider additional flop gates or bypass flows to improve uptime.



MSE's Observations – Round Wood Storage

- Crane
 - Radial VS Portal VS 2 Radial
 - Size the need properly
 - Stack strategy to allow for Species separation and FIFO
 - Analyze capital vs. operating cost for crane options vs. mobile equipment
- Log Storage
 - Effective log runs
 - L90s for backup operation and overflow unloading
 - Right size the total storage needs (with chips and logs) – 0.5 to 3 months depending on area.



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MSE's Observations - Logline

- Logline
 - Size based on staffing strategy
 - Crane loading
 - Log Loader ramp for loading line
- Chipper
 - Foundation Design
 - Building Design
 - Starter Design
 - Design for blade changeout
 - Chip geometry
- Bark / Fuel Collection
 - Consider screening
 - Bark hog
 - Chute design critical
 - Difficult application for instrumentation



MSE's Observations – Chip Storage

- Chip Storage
 - Chip segregation needs
 - Chip management
 - Ease of cleanup
 - Paving
 - Inside vs Outside
- Reclaiming
 - Front End Loader with Bunker
 - Under pile reclaimer screw
 - Stacker reclaimer
 - Layout HW/SW storage needs.
 - Mix may not be as critical as you think



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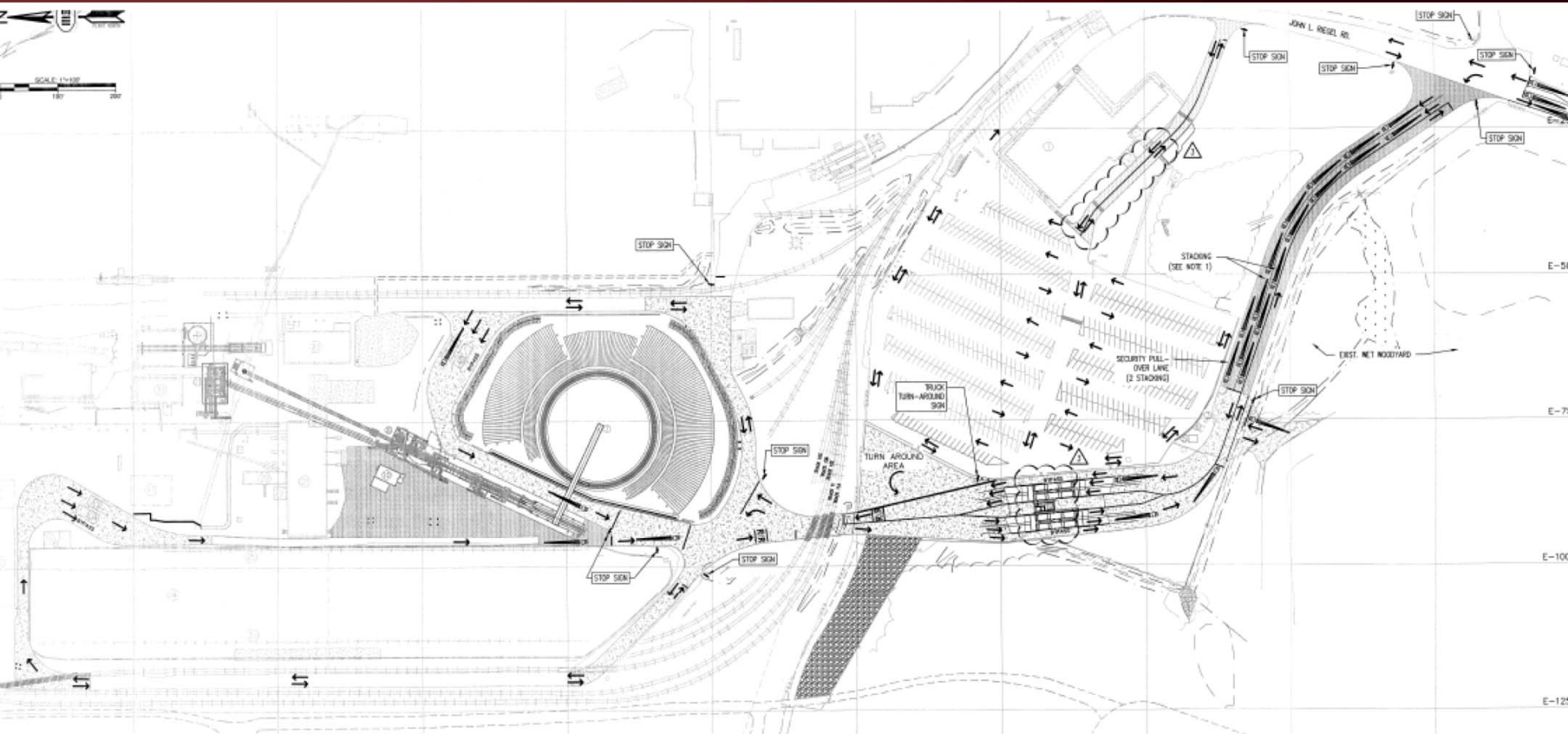
Traffic Study



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Traffic Study – Paper Mill Client

- Multiple Cranes and Truck Paths
- Multiple Scales w/ Automation
- Employee & Truck Traffic Segregation
- Rail Crossing & Safety Devices
- Civil Engineering critical for stormwater drainage.



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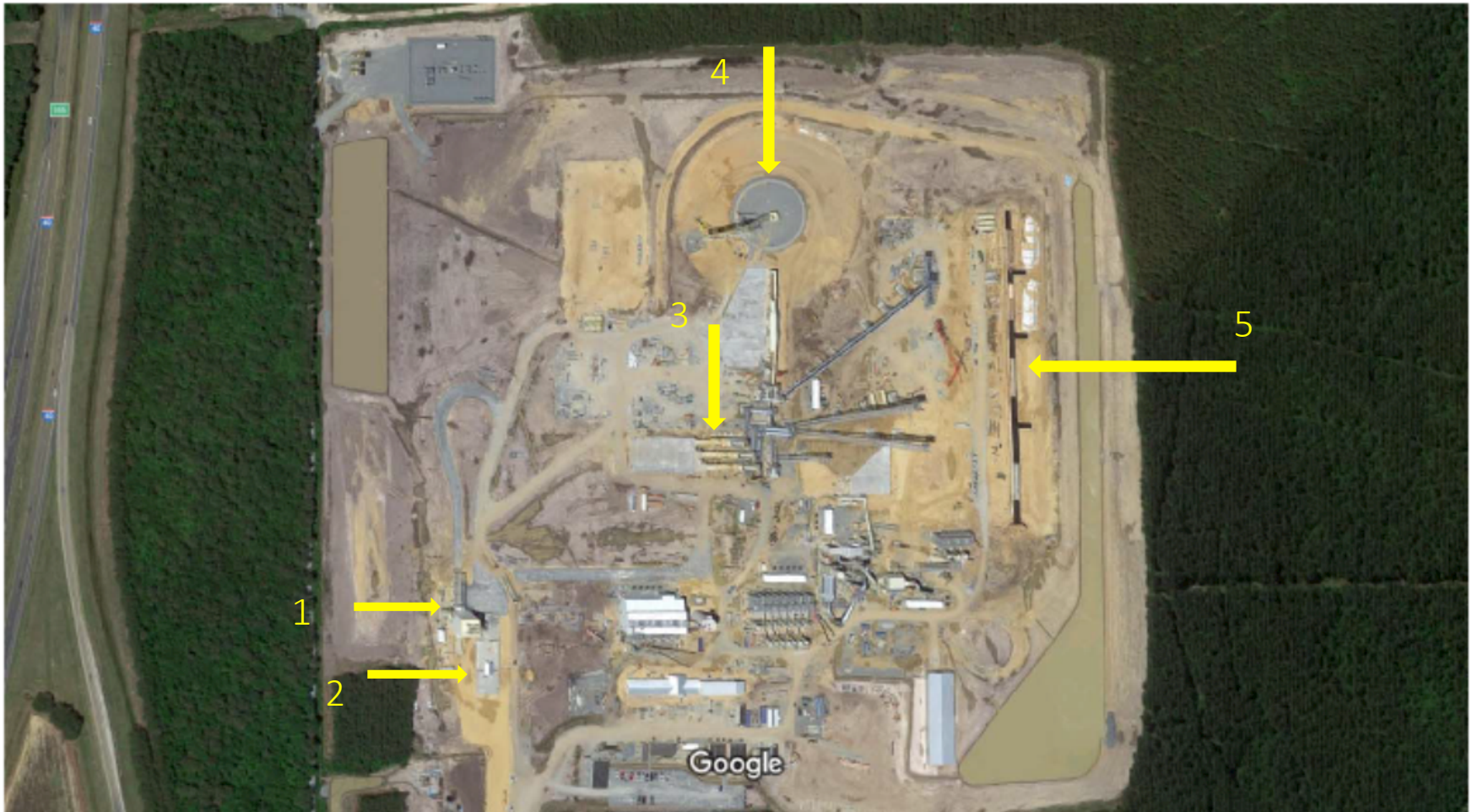
Plant Layouts



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Imagery ©2018 Google, Map data ©2018 Google 200 ft

Pellet Mill (Under-Construction)

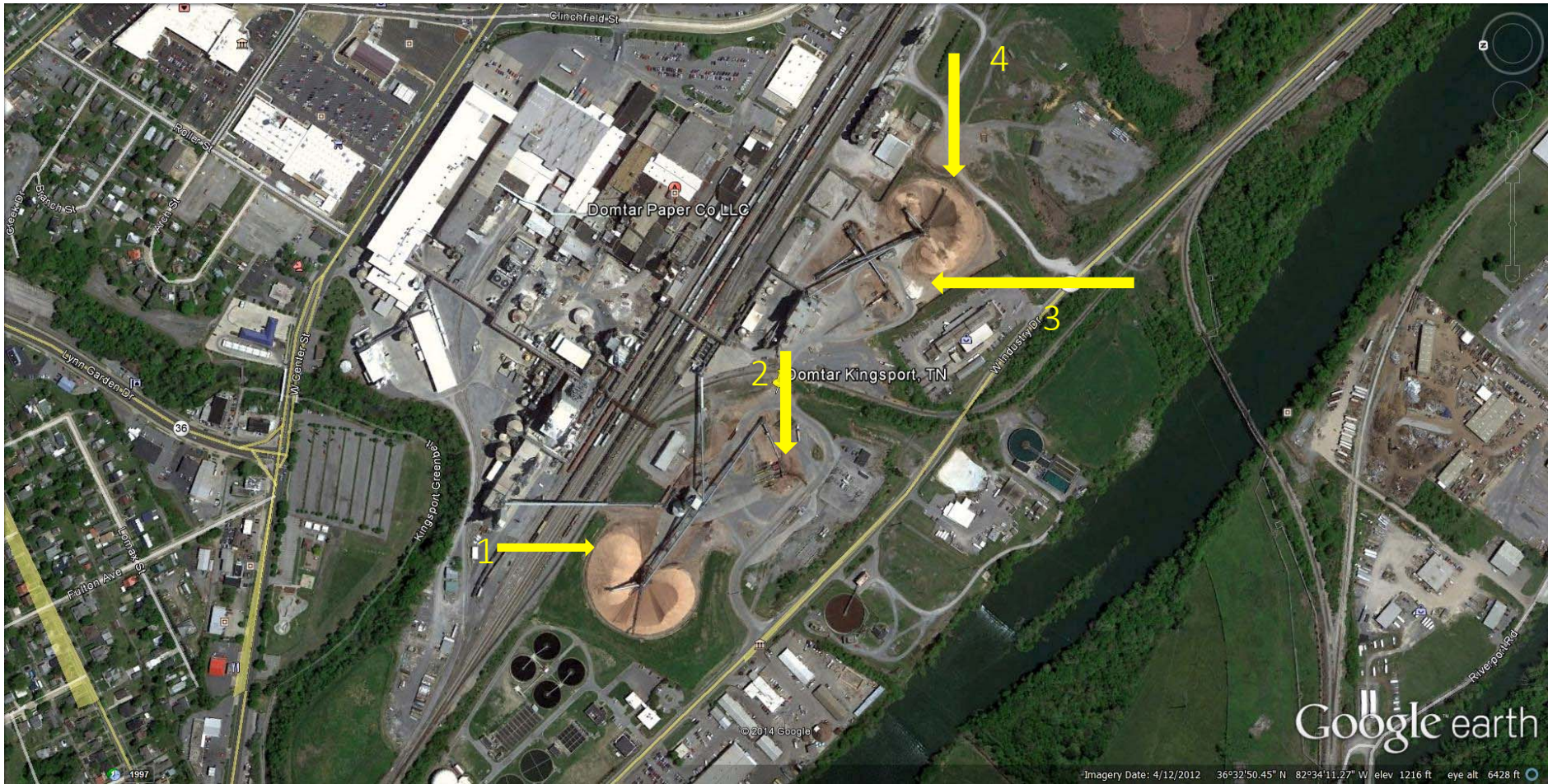
1. Load out
2. Scales
3. Truck Dumpers
4. Radial Crane
5. Reclaimers



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Paper Mill

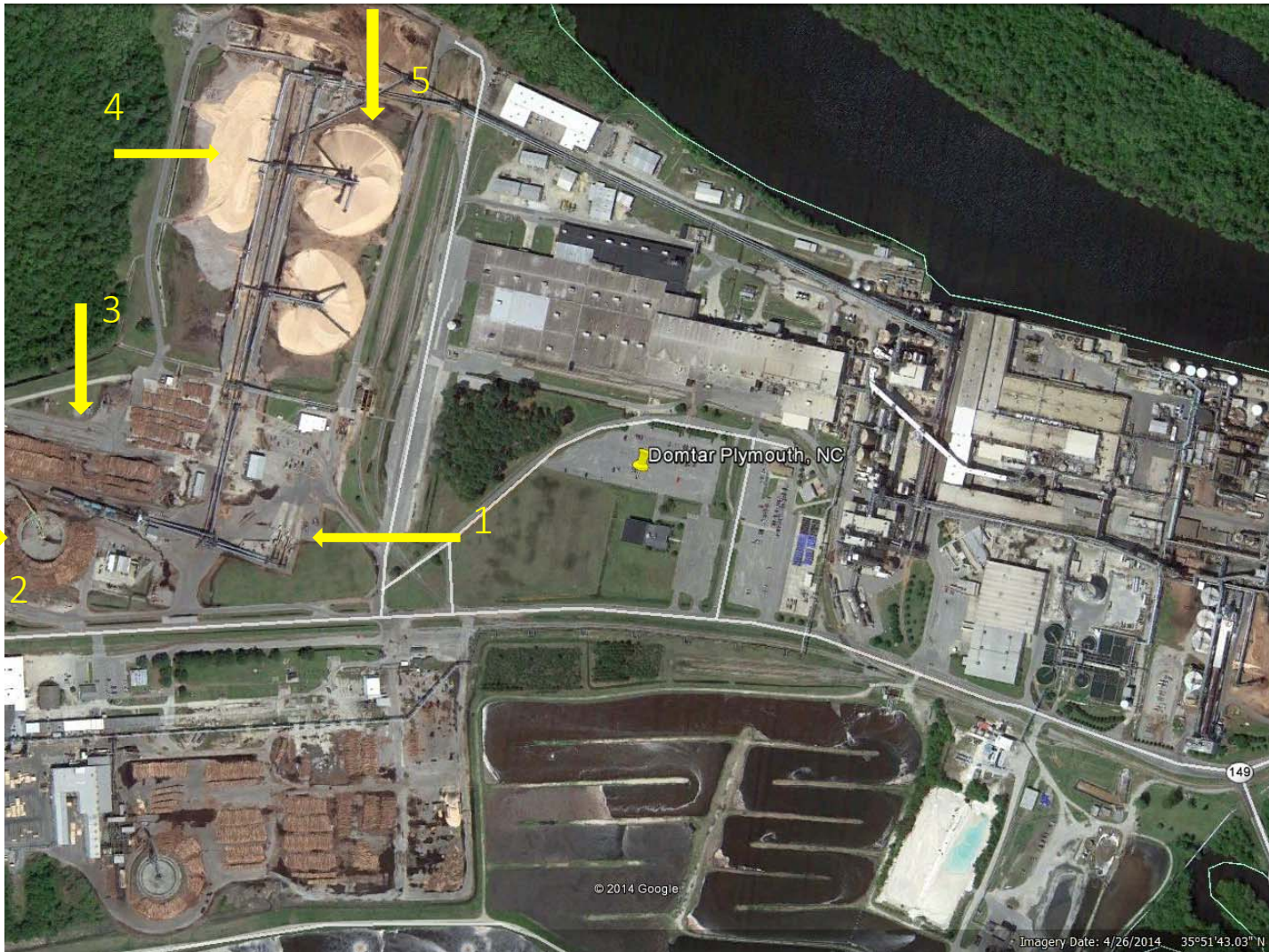
1. Furnish Stacker Reclaimer
2. Truck Dumpers
3. Truck Dumpers
4. Fuel Stacker Reclaimer



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Paper Mill/ Saw Mill

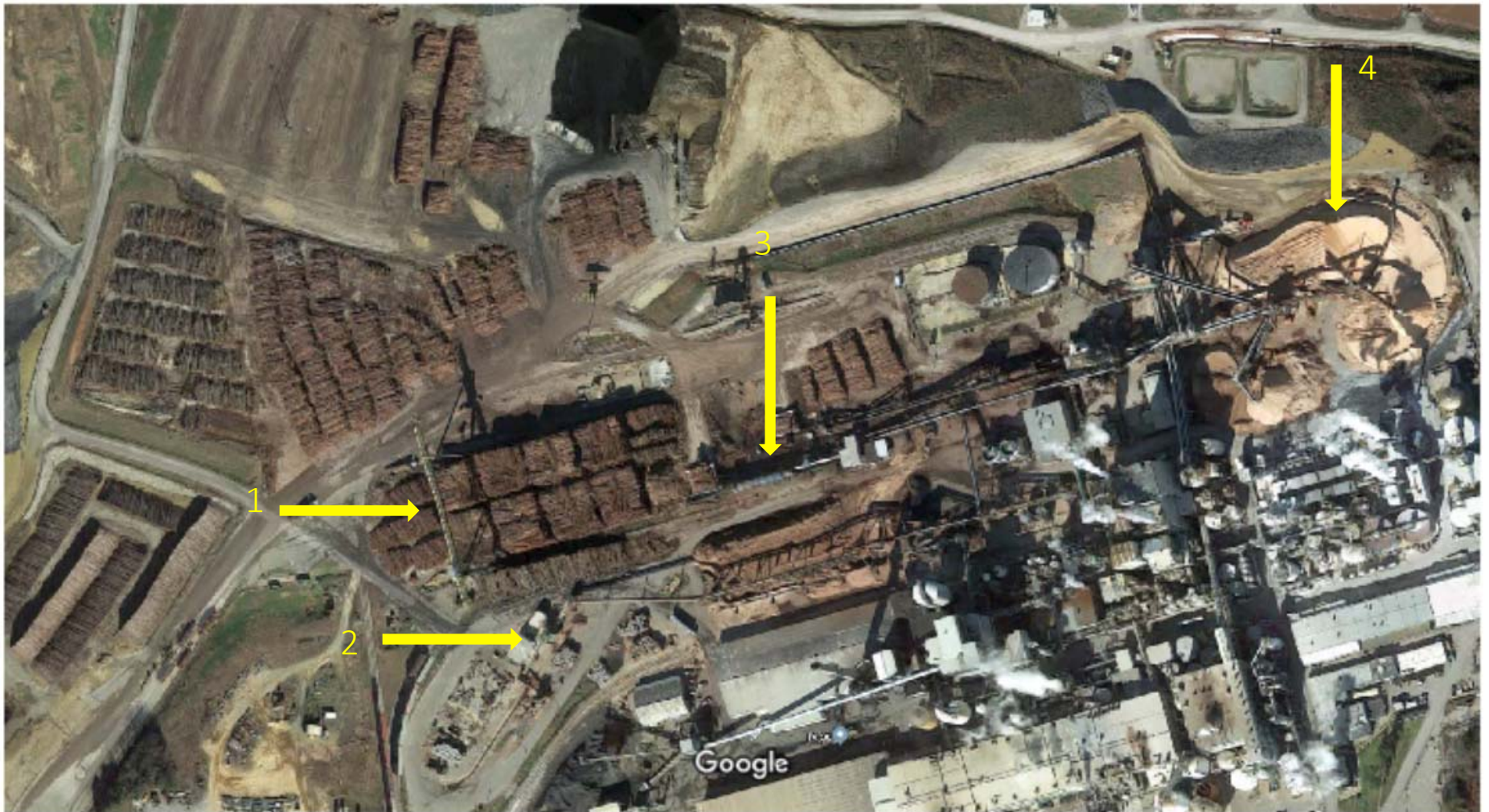
1. Truck Dumpers
2. Radial Crane
3. Portal Crane
4. Tripper Conveyor
5. Stacker/ Reclaimers



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Kraft Paper Mill

1. Crane
2. Truck Dump
3. Log Lines
4. Stacker Reclaimers



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Conclusion

- Devote design effort to the wood yard
- Seek help – Shameless plug – MSECO can help with your new plant designs and you existing plant retrofits.
- Define considerations for effective wood yards
 - Wood receipt
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- Run the numbers – long term the automated processing can be financially attractive.



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