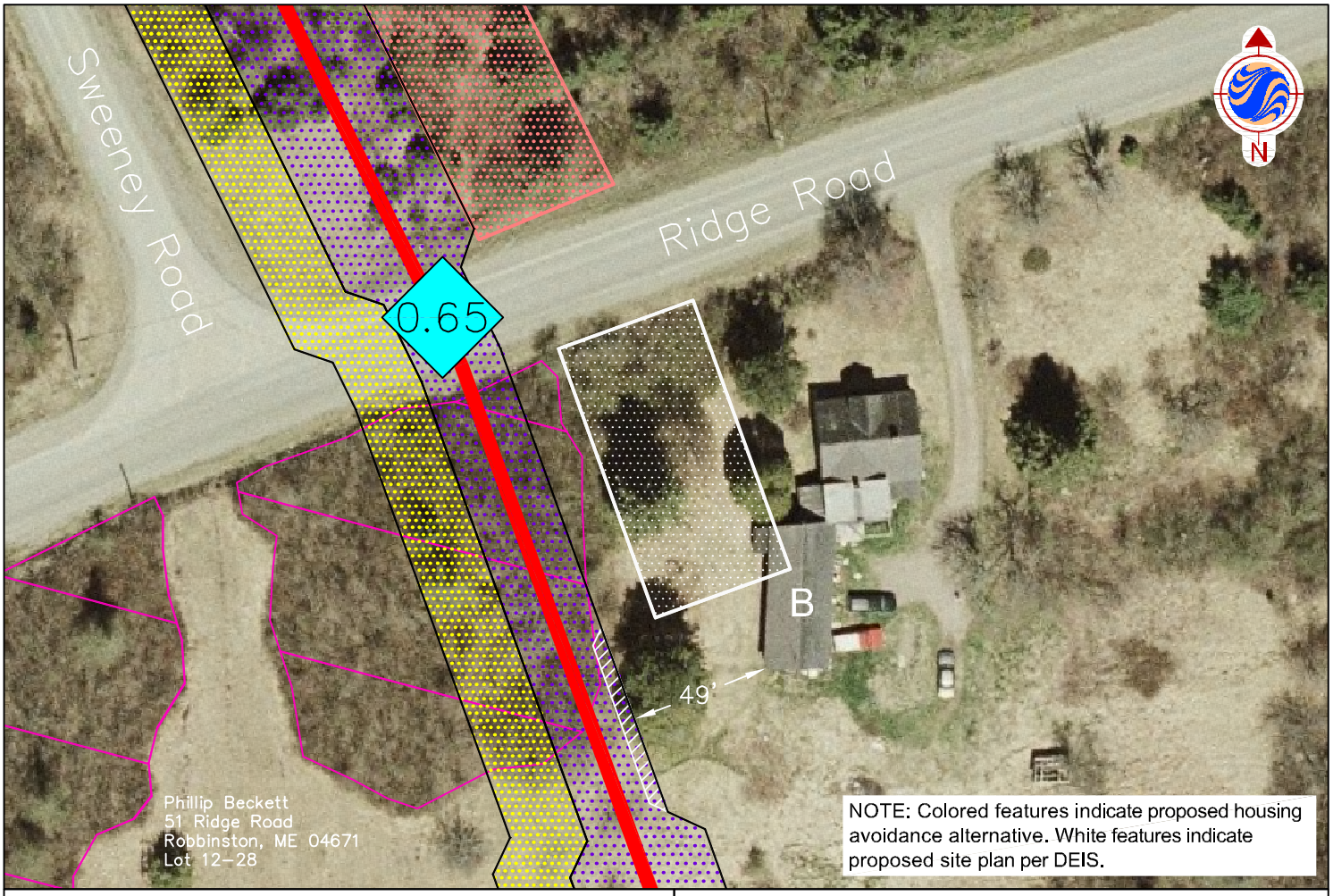
Appendix P

Site-Specific Residential Plans



NOTES

Residential – Tract B

Proposed Site Plan

1. This tract is located at Mile Post 0.63.
2. Residential structure is located 49 feet from permanent ROW.
3. Residential Structure is located within the ATWS.

Alternative

1. Eliminate ATWS (50' x 100') near structure, and reduce the permanent ROW by 5 feet.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install road bore.
5. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
6. Install temporary aboveground marker.
7. Secure topsoil dedicated for access area replacement upon final cleanup.
8. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
9. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
10. Establish and maintain access for mainline construction ingress/egress.
11. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
12. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

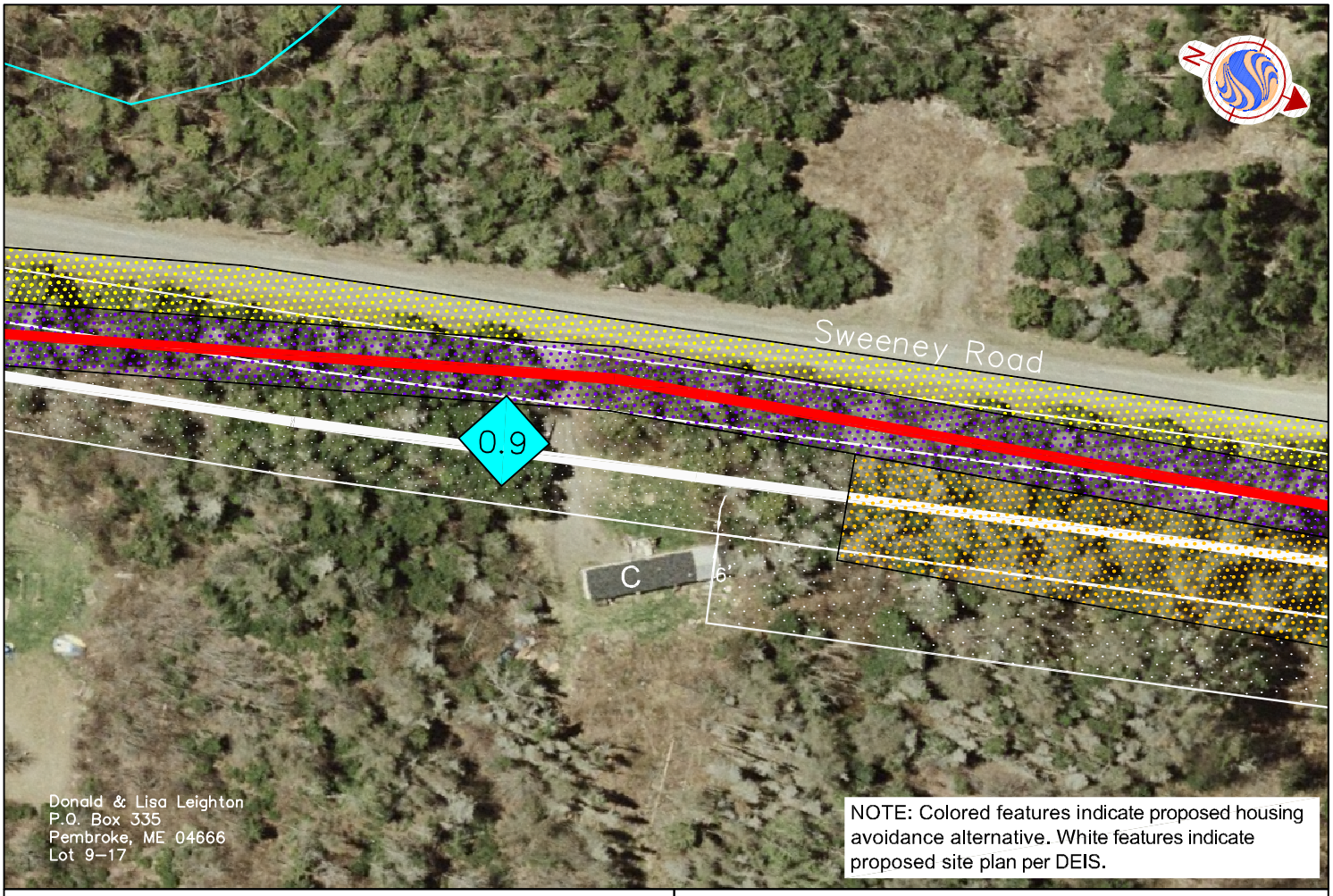
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
2

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F02_Res_Mit.dwg



NOTES

Residential – Tract C

Proposed Site Plan

1. This tract is located at Mile Post 0.91.
2. Residential structure is located 6 feet from the Permanent ROW.
3. Residential structure is located within the pipe laydown area.

Alternative

1. Locate pipeline route to the west to greater than 50 feet from residential structure and reduce pipe laydown area to lie beyond 50 feet of residential structure.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 — 80 FEET

195600029

Downeast LNG

Client/Project
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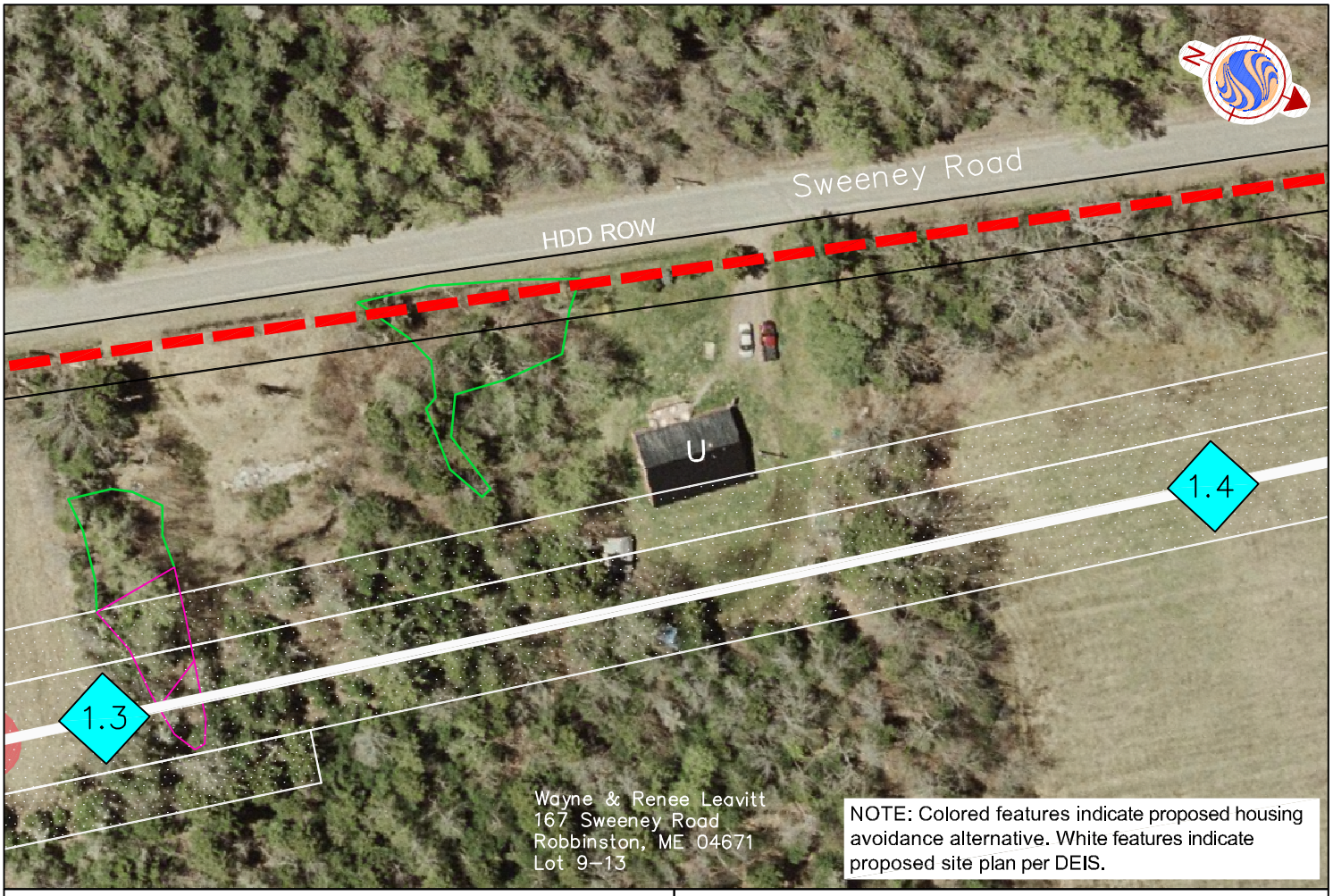
Robbinston, Maine

Figure No.
3

Title
Residence Mitigation Map
9/28/09

Map created by Stantec.

00029-F03_Res_Mit.dwg



NOTES

Residential – Tract U

Proposed Site Plan

1. This tract is located at Mile Post 1.35.
2. One residential structure is within the Temporary ROW.

Alternative

1. Continue the HDD pipe installation located at Mile Post 1.11 to extend 50 feet beyond the edge of residential structures. Position a new 25' x 200' HDD ATWS at the south end of the extended HDD installation. Position a new 50' x 743' pipe laydown area at the south edge of new HDD ATWS. Position a new 12.5' x 200' HDD ATWS at the north edge of the HDD ATWS.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 — 80 FEET

195600029

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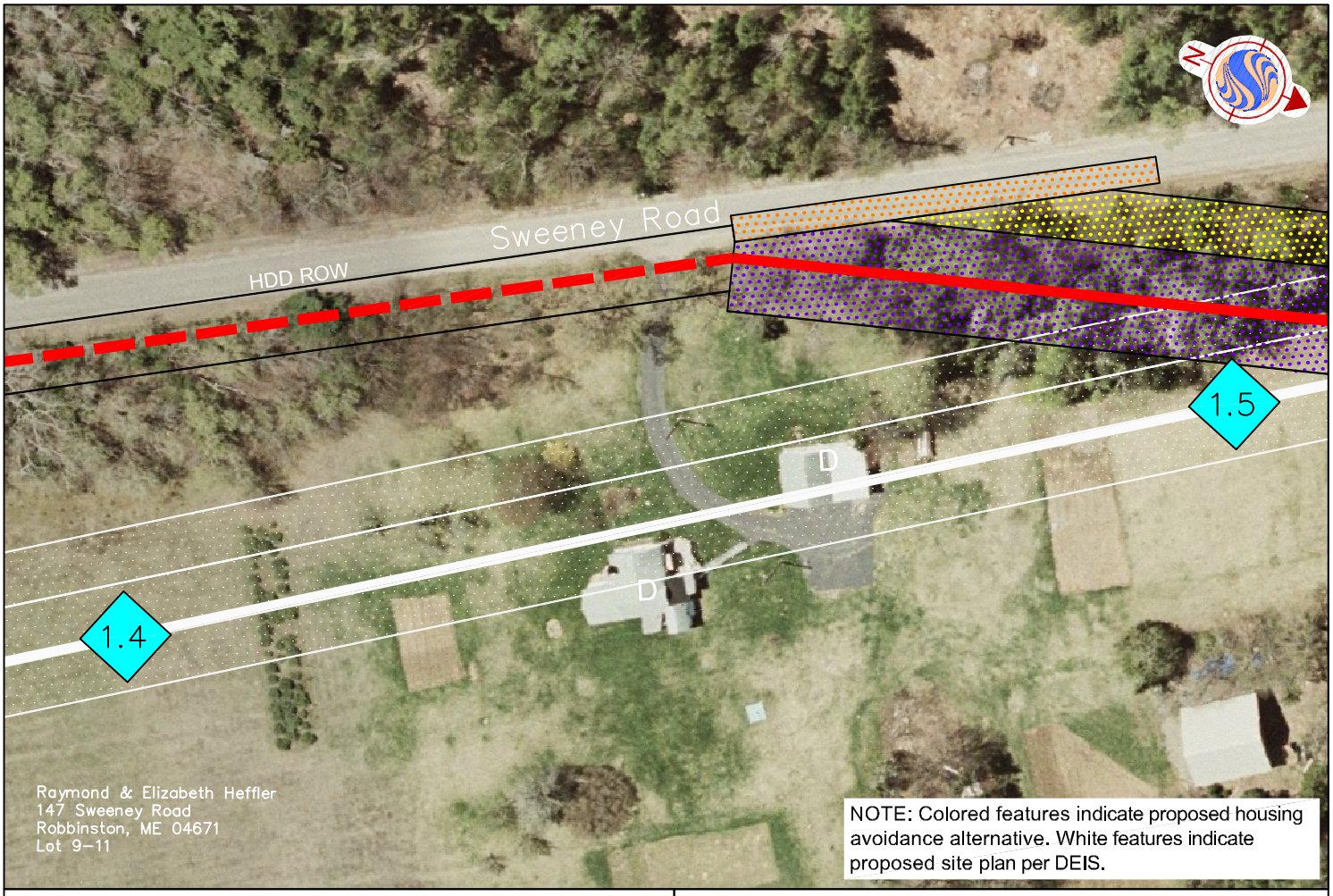
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
4

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F04_Res_Mit.dwg



NOTES

Residential – Tract D

Proposed Site Plan

1. This tract is located at Mile Post 1.45.
2. Two residential structures are within the Permanent ROW. One structure is 7 feet from the pipeline centerline. The second structure is intersected by the pipeline centerline.

Alternative

1. Continue the HDD pipe installation located at Mile Post 1.11 to extend 50 feet beyond the edge of residential structures. Position a new 25' x 200' HDD ATWS at the south end of the extended HDD installation. Position a new 50' x 743' pipe laydown area at the south edge of new HDD ATWS. Position a new 12.5' x 200' HDD ATWS at the north edge of the HDD ATWS.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 — 80
FEET

195600029

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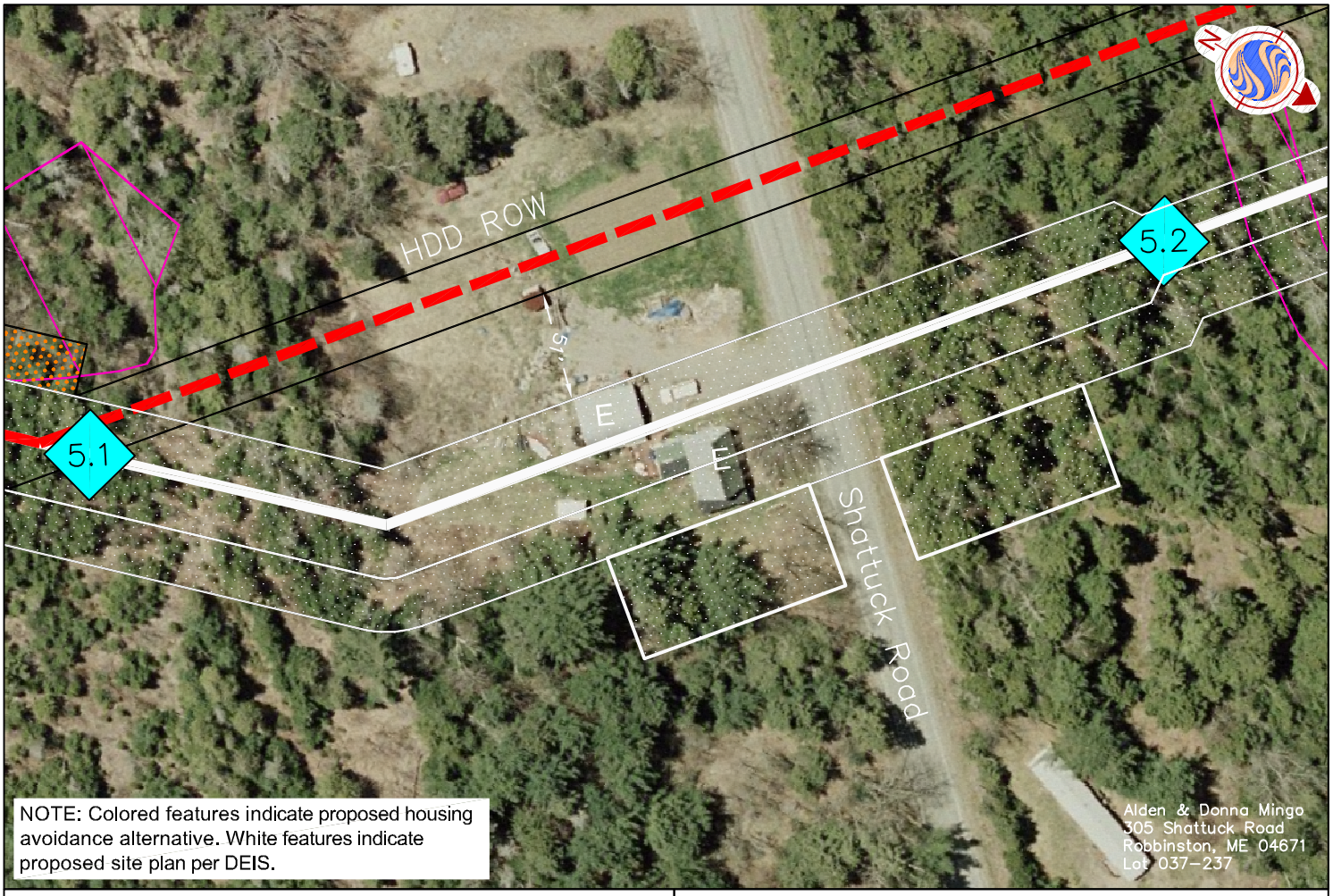
Robbinston, Maine

Figure No.
5

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F05_Res_Mit.dwg



NOTES

Residential – Tract E

Proposed Site Plan

1. This tract is located at Mile Post 5.16.
2. Residential structures are within the Permanent ROW and intersected by the pipeline centerline.

Alternative

1. Create new HDD installation beginning at Mile Post 5.1 and continue in a straight line to Mile Post 5.24. Create a 17,500 square foot HDD ATWS and a 25' x 200' HDD ATWS near the south eastern end of new HDD installation at Mile Post 5.1. Create 50' x 549' laydown area and 25' x 200' HDD ATWS near the north western end of new HDD installation at Mile Post 5.27. Remove the two ATWS on Shattuck Road.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install road bore.
5. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
6. Install temporary aboveground marker.
7. Secure topsoil dedicated for access area replacement upon final cleanup.
8. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
9. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
10. Establish and maintain access for mainline construction ingress/egress.
11. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
12. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 — 80 FEET

195600029

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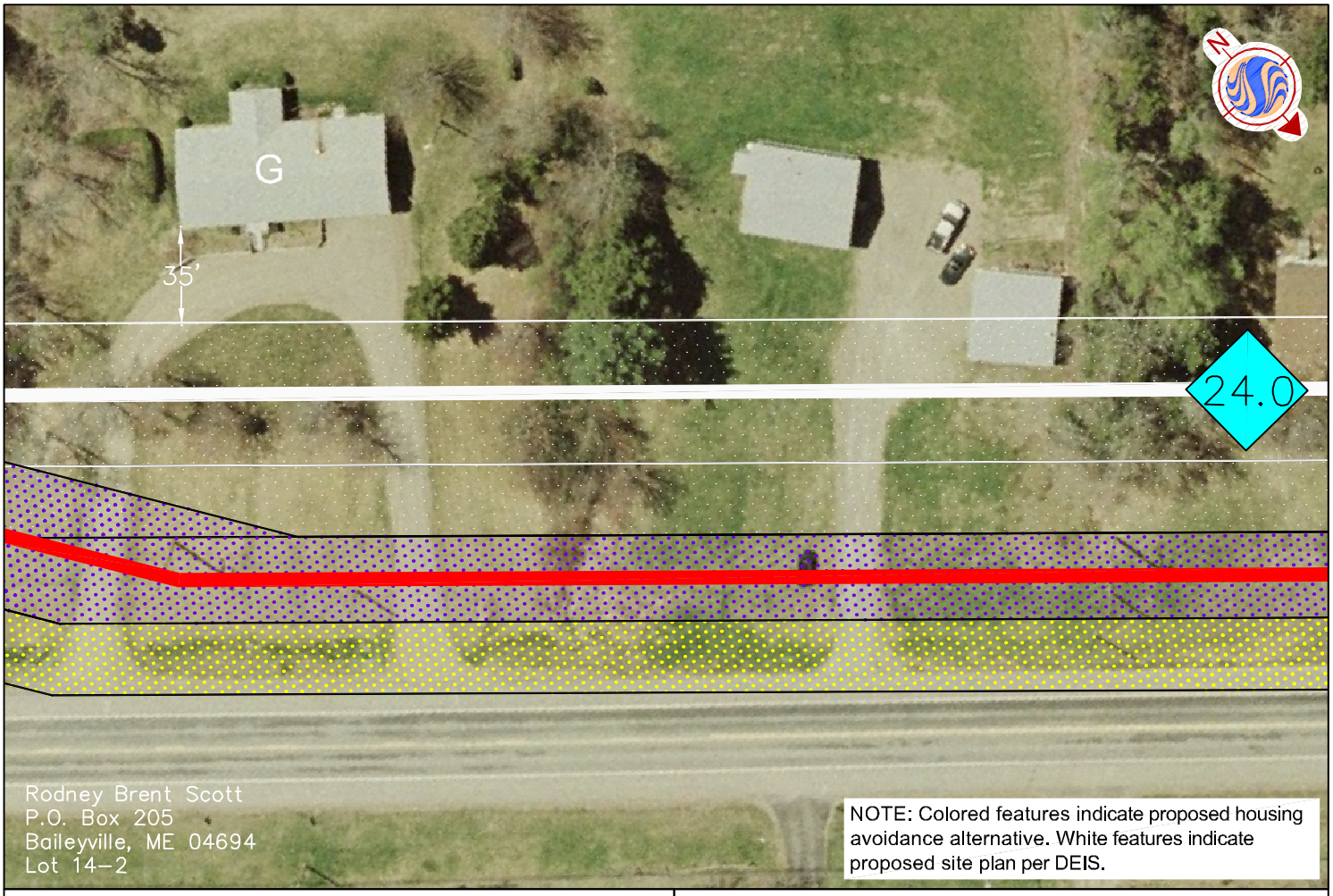
Robbinston, Maine

Figure No.
6

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F06-Res_Mit.dwg



NOTES

Residential – Tract G

Proposed Site Plan

1. This tract is located at Mile Post 23.94.
2. Residential structure is 35 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
8

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F08_Res_Mit.dwg

NOTES

Residential – Tract H

Proposed Site Plan

1. This tract is located at Mile Post 23.97.
2. Residential structure is 24 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
9

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

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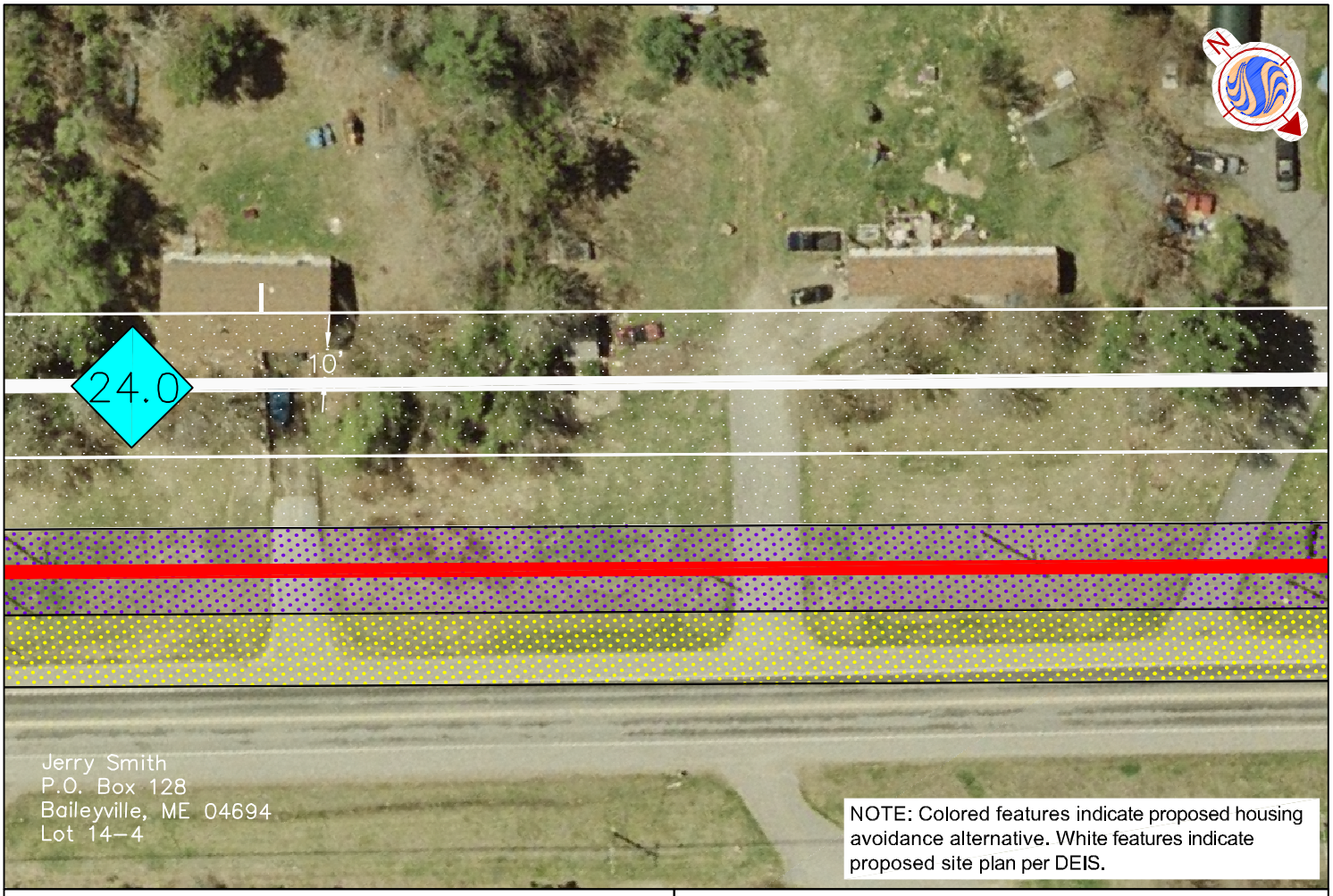


NOTES

Residential – Tract I

Proposed Site Plan

1. This tract is located at Mile Post 24.01.
2. Residential structure is within the Permanent ROW and 10 feet from the pipeline centerline.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

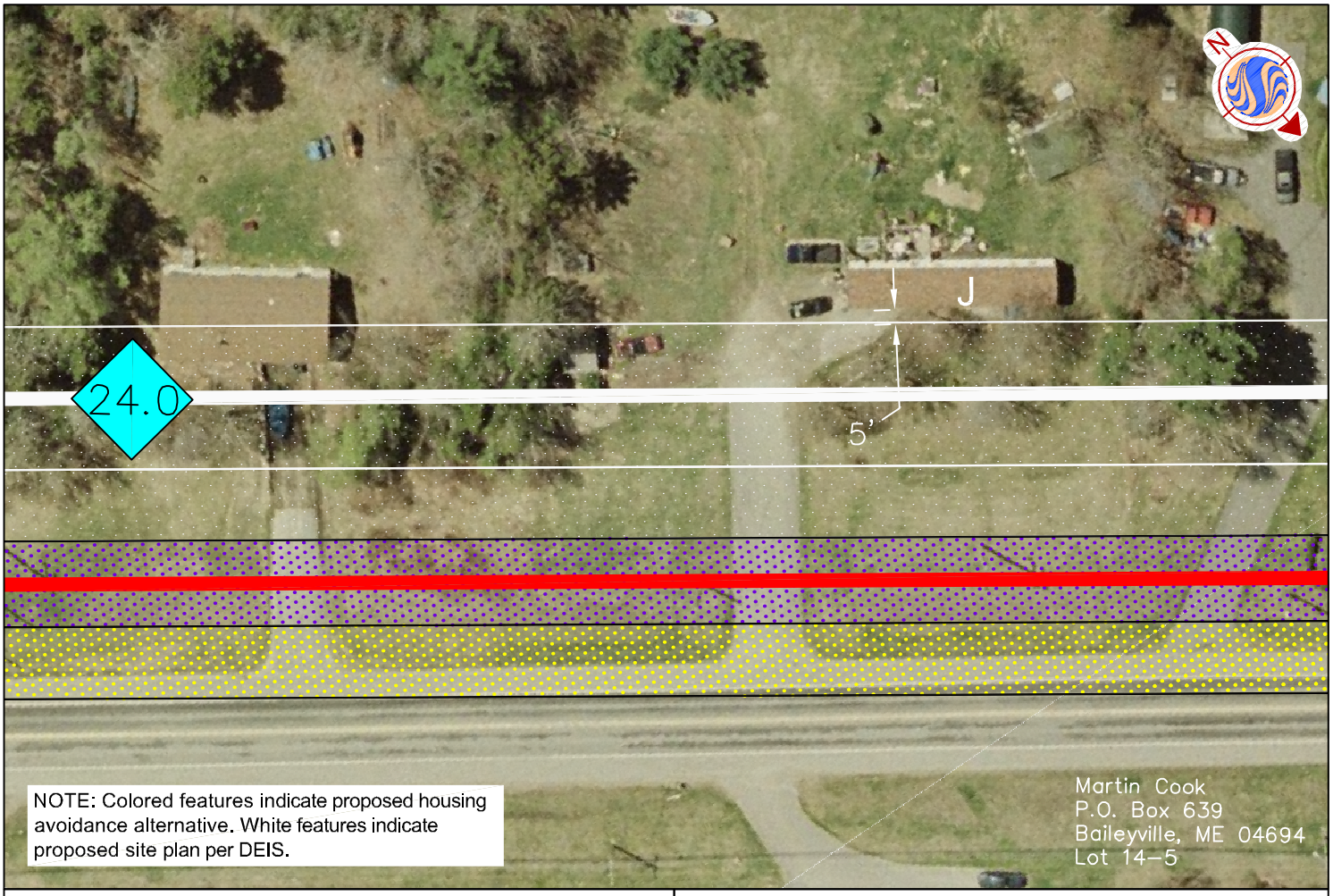
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
10

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F10_Res_Mit.dwg



NOTES

Residential – Tract J

Proposed Site Plan

1. This tract is located at Mile Post 24.05.
2. Residential structure is 5 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

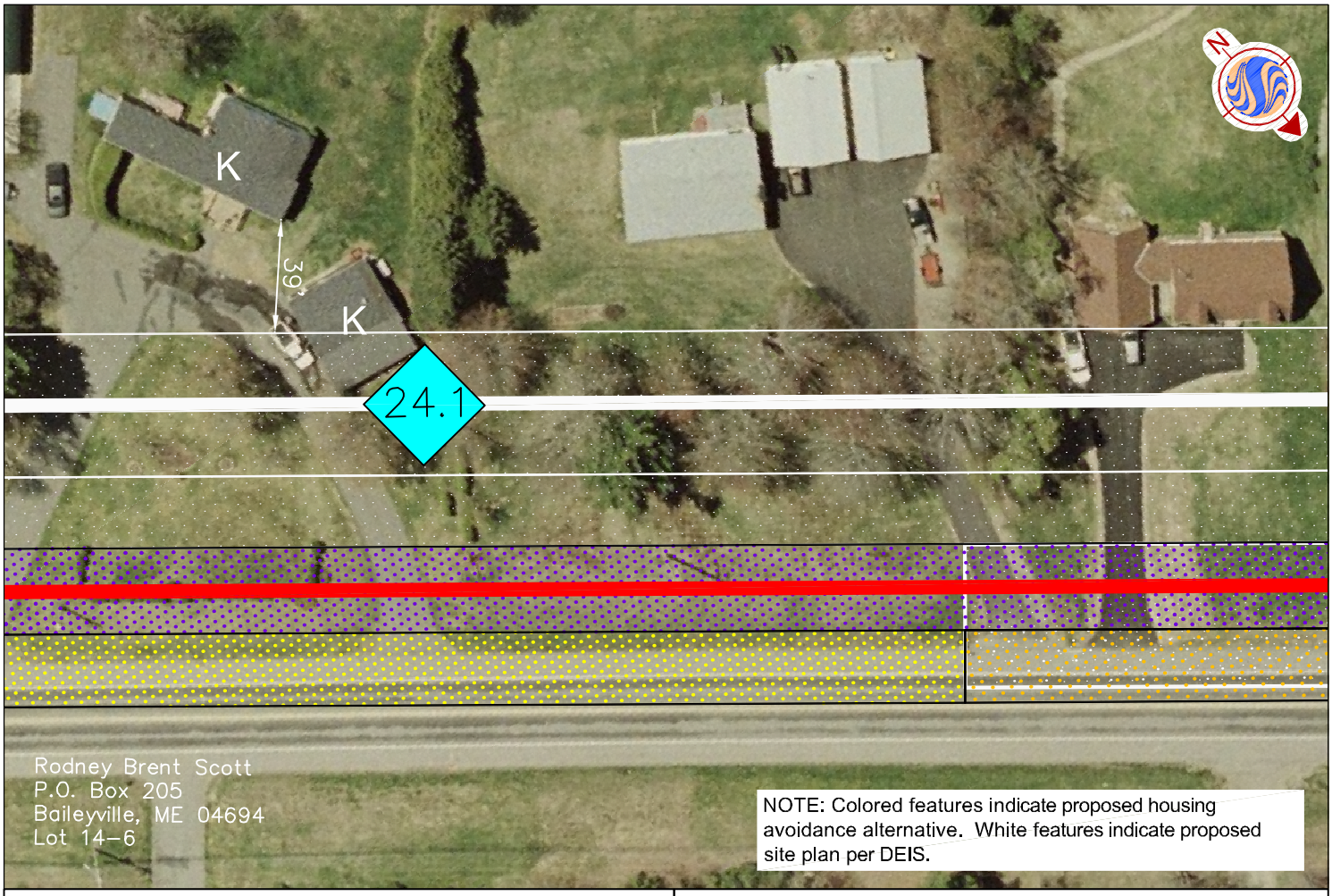
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
11

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F11_Res_Mit.dwg



NOTES

Residential – Tract K
Proposed Site Plan
1. This tract is located at Mile Post 24.09.
2. Residential structure is 39 feet from Permanent ROW.

Alternative
1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures
1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

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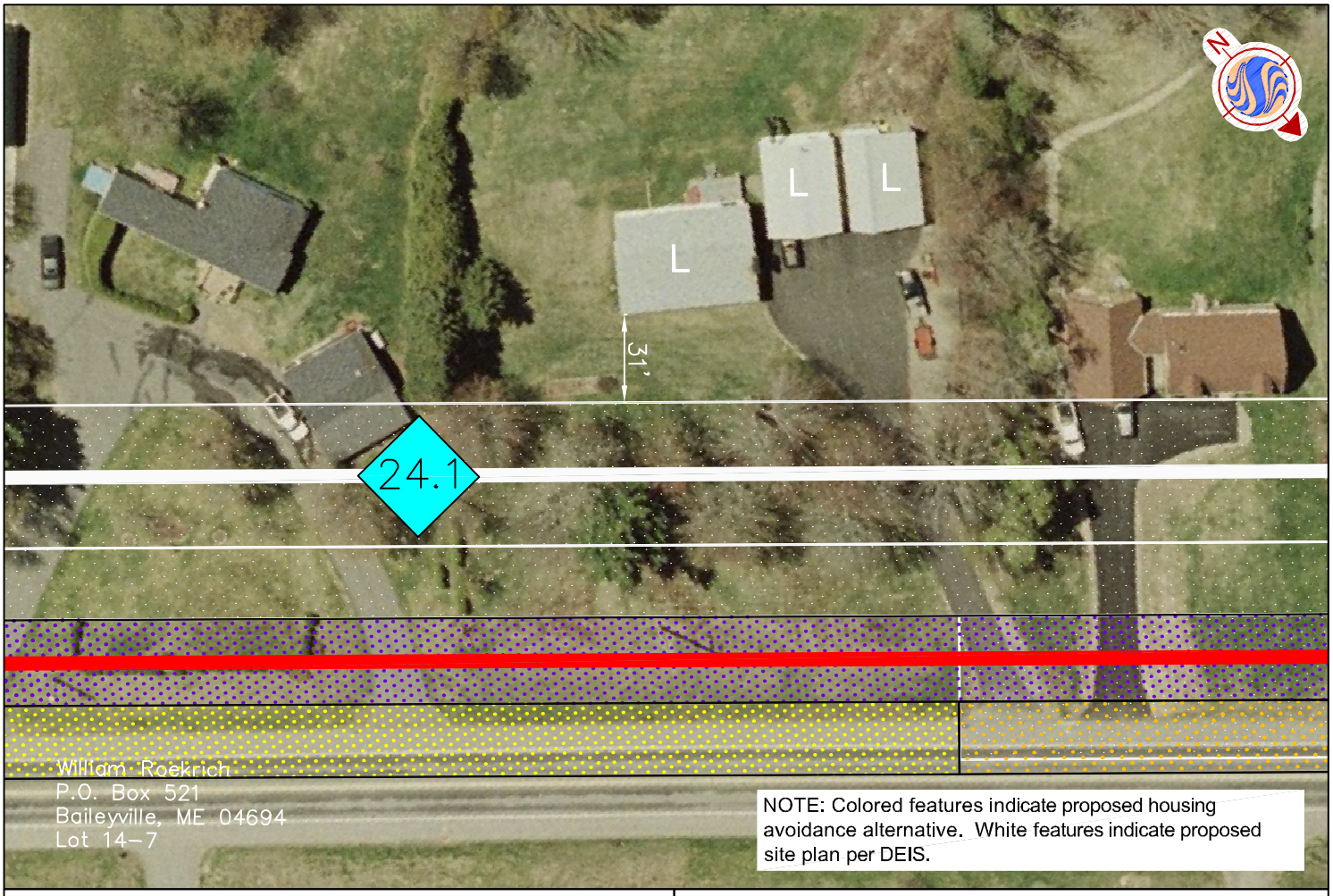
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
12

Title
Residence Mitigation Map
1/12/10

00029-F12_Res_Mit.dwg



NOTES

Residential – Tract L

Proposed Site Plan

1. This tract is located at Mile Post 24.12.
2. Residential structure is 31 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

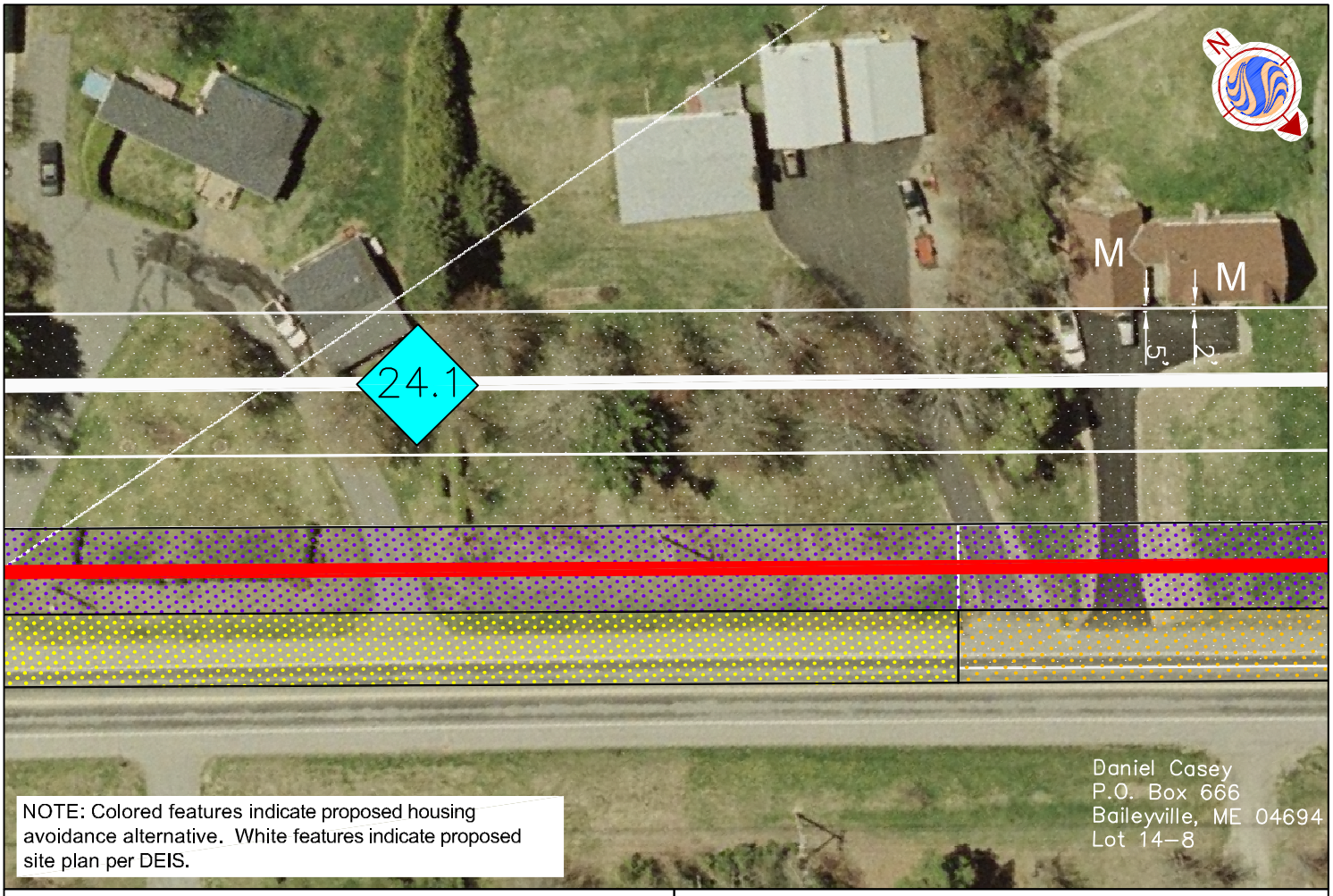
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
13

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F13_Res_Mit.dwg



NOTE: Colored features indicate proposed housing avoidance alternative. White features indicate proposed site plan per DEIS.

NOTES

Residential – Tract M

Proposed Site Plan

1. This tract is located at Mile Post 24.15.
2. One residential structure is located 5 feet, and one structure is located 2 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
14

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F14_Res_Mit.dwg

NOTES

Residential – Tract N

Proposed Site Plan

1. This tract is located at Mile Post 24.17.
2. Residential structure is 8 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas. affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
15

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F14_Res_Mit.dwg

NOTES

Residential – Tract 0

Proposed Site Plan

1. This tract is located at Mile Post 24.19.
2. One residential structure is within the Permanent ROW and directly abuts the pipeline centerline. A second residential structure is 7 feet from the Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

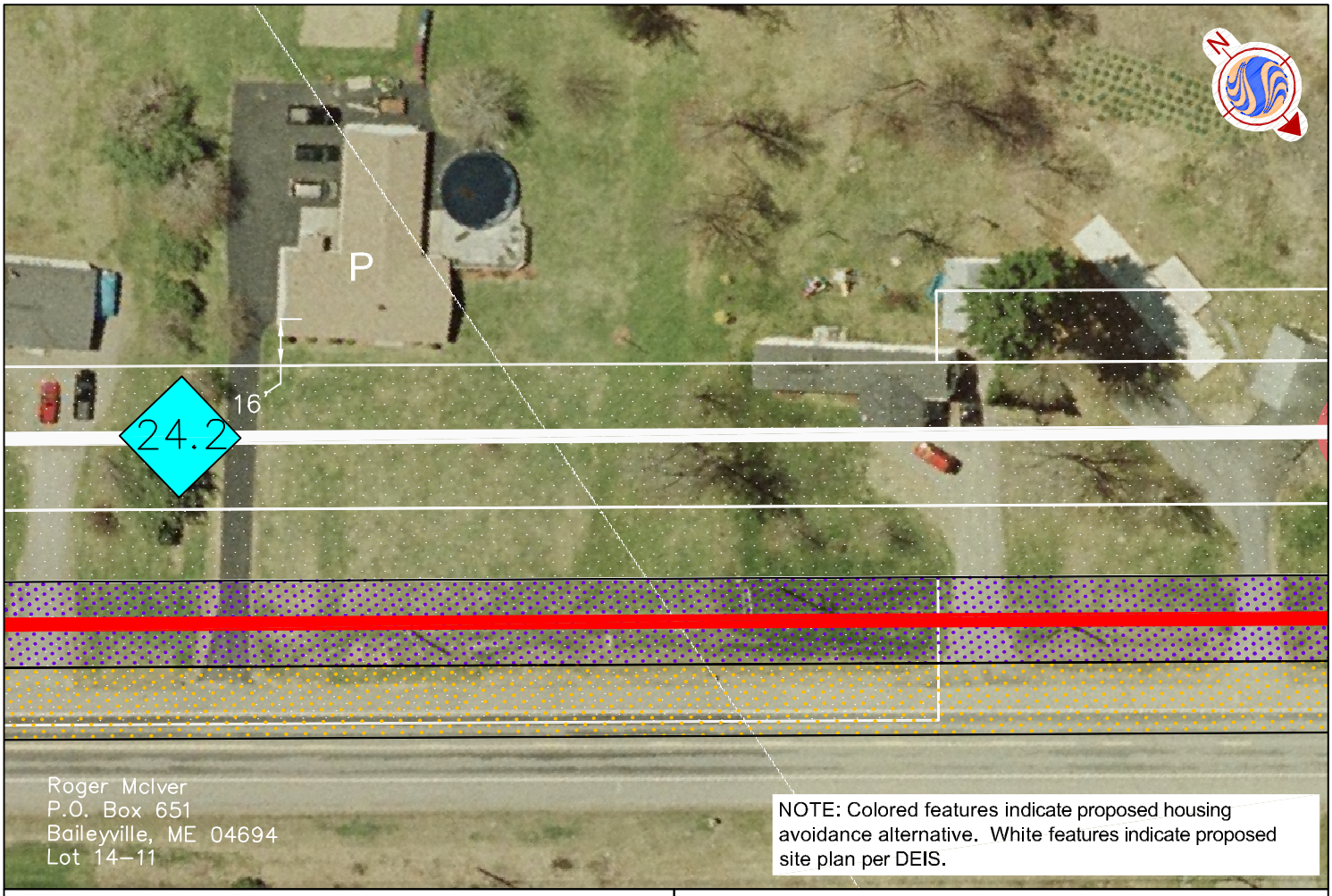
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
16

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029-F16_Res_Mit.dwg



NOTES

Residential – Tract P

Proposed Site Plan

1. This tract is located at Mile Post 24.21.
2. Residential structure is 16 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

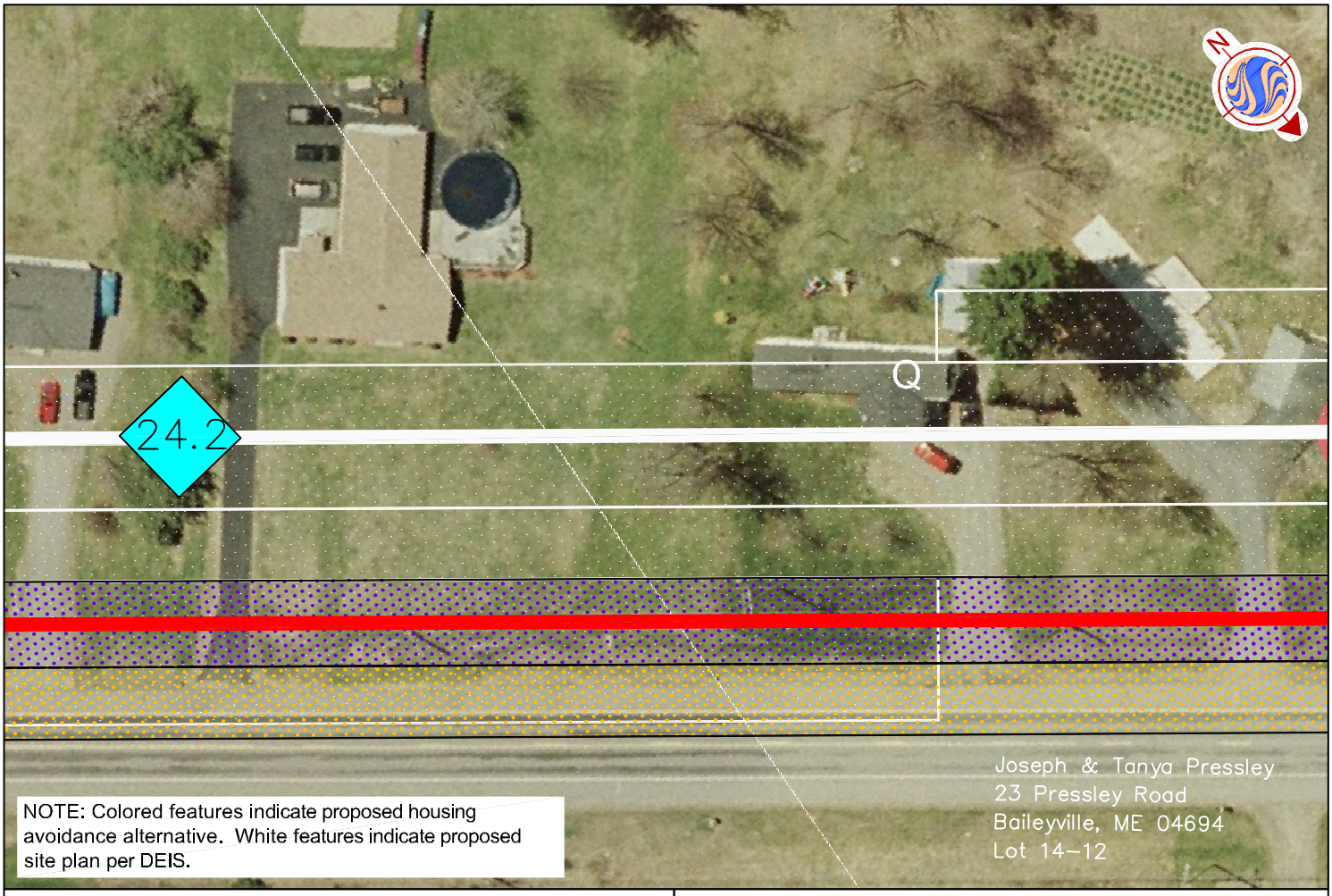
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
17

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029–F17–Res_Mit.dwg



NOTE: Colored features indicate proposed housing avoidance alternative. White features indicate proposed site plan per DEIS.

NOTES

Residential – Tract Q

Proposed Site Plan

1. This tract is located at Mile Post 24.27.
2. Residential structure is within the Permanent ROW and directly abuts the pipeline centerline. Residential structures are also within an HDD ATWS.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
18

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029–F18_Res_Mit.dwg

NOTES

Residential – Tract R

Proposed Site Plan

1. This tract is located at Mile Post 24.32.
2. Residential structure is 32 feet from Permanent ROW.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

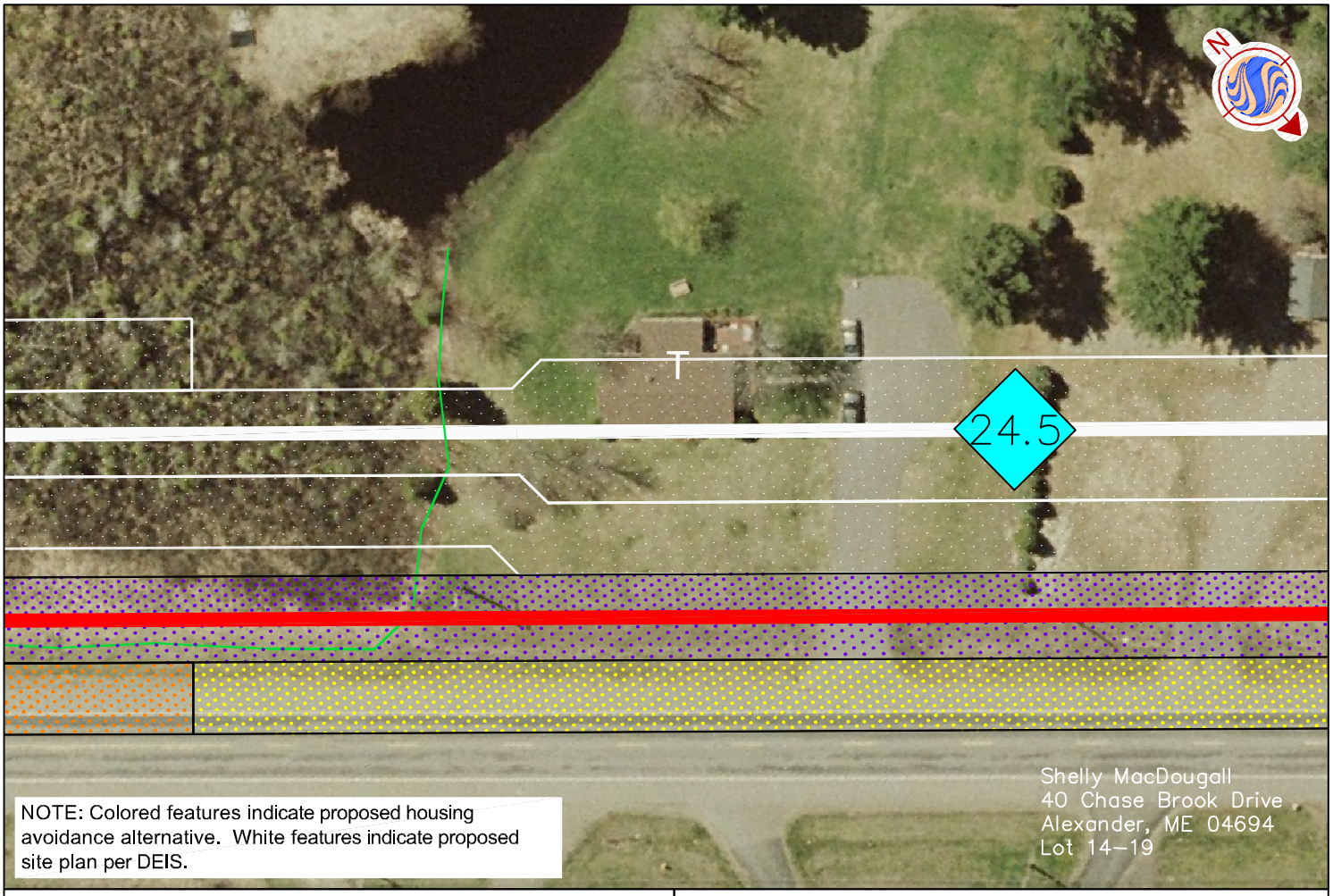
Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
19

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029–F19_Res_Mit.dwg



NOTES

Residential – Tract T

Proposed Site Plan

1. This tract is located at Mile Post 24.48.
2. Residential structure is within the Permanent ROW and abuts the pipeline centerline.

Alternative

1. Relocate pipeline closer to the US Route 1 ROW to increase distance from residences to greater than 50 feet. Combine 50'x600' laydown area located at Mile Post 24.20 and 25'x200' HDD ATWS located at Mile Post 24.28 into one 25'x750' laydown area located between the ROW and US Route 1. Relocate 25'x200' HDD ATWS located at Mile Post 24.41 between the ROW and US Route 1. Remove each 25'x200' HDD ATWS on the northwest side of the pipeline at each end of the HDD.

Standard Construction Measures

1. Install safety fence along the edge of permanent ROW out to a distance of 100 feet on either side of residence.
2. Prepare access and establish environmental protection devices in accordance with Best Management Practices.
3. Segregate topsoil within boundaries of workspace if required.
4. Install and secure temporary cap and immediately backfill ditch upon inspection approvals.
5. Install temporary aboveground marker.
6. Secure topsoil dedicated for access area replacement upon final cleanup.
7. Remove safety fence along edge of workspace and relocate along edge of access area for mainline construction.
8. Implement the FERC Upland Erosion Control, Revegetation and Maintenance Plan.
9. Establish and maintain access for mainline construction ingress/egress.
10. Except area required for continued access for mainline construction, immediately restore driveway, lawn areas, and landscaping within construction work area.
11. Upon completion of all mainline construction activities and during final restoration, immediately restore any remaining affected areas.

LEGEND

- 1/10 MILE POST
- POINT OF INFLECTION
- ENTRY & EXIT POINT FOR HDD
- PIPELINE CENTERLINE
- HDD CENTERLINE
- PERMANENT ROW
- TEMPORARY ROW
- TEMPORARY ACCESS ROADS
- M.P. XX — MILE POST
- STREAM
- FIELD DELINEATED WETLANDS
- REMOTELY DELINEATED WETLANDS
- OPEN WATER FEATURE
- ATWS AREA
- HDD ATWS AREA
- PIPE LAYDOWN AREA

0 60
FEET

195600029

Downeast LNG

Client/Project
Downeast LNG
Robbinston, Maine

Figure No.
21

Title
Residence Mitigation Map
1/12/10

Map created by Stantec.

00029–F21_Res_Mit.dwg

Appendix Q

Underwater Noise Contour Maps

Appendix C: Sound Maps

Sound field maps are shown below for each of the scenarios described in Section 2 (see also overview map, Figure 1 of Section 2.1). At each point within the sound field, maximum sound levels are selected over all modeled depths, down to the local bottom depth. In the case of the impact hammer, which is an impulsive source, SPL_{RMS} values were estimated from the SEL values output by the model by the addition of 10 dB (see Section 3.1). Note that the scale is smaller for Figure 8 and Figure 9 than for the remaining plots.

Marine Operations

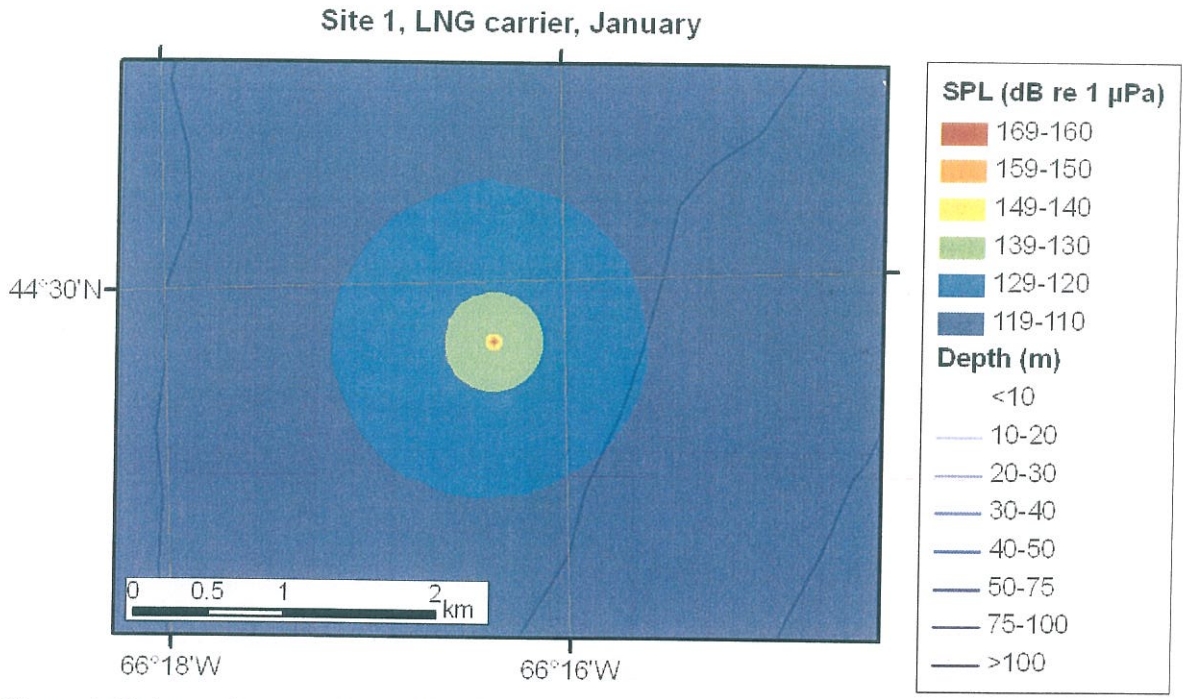


Figure 8. Estimated received sound levels arising from an LNG carrier in transit at half-speed at site 1 (eastern Bay of Fundy).

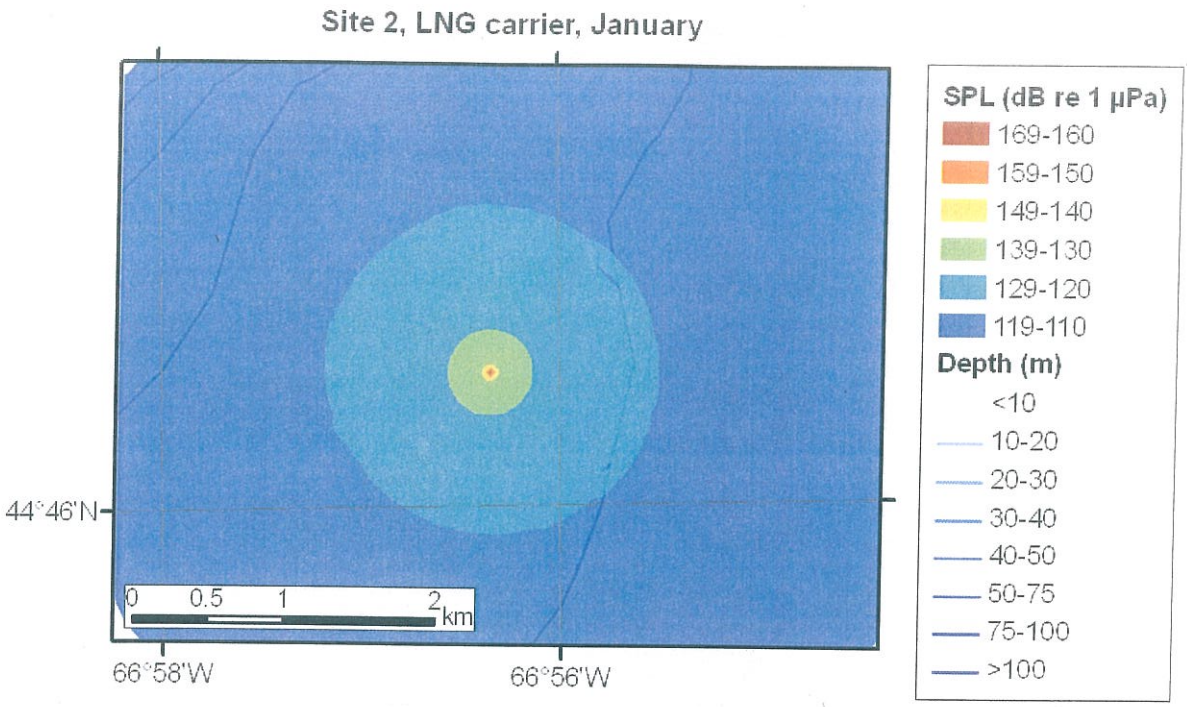


Figure 9. Estimated received sound levels arising from an LNG carrier in transit at half-speed at site 2 (western Bay of Fundy).

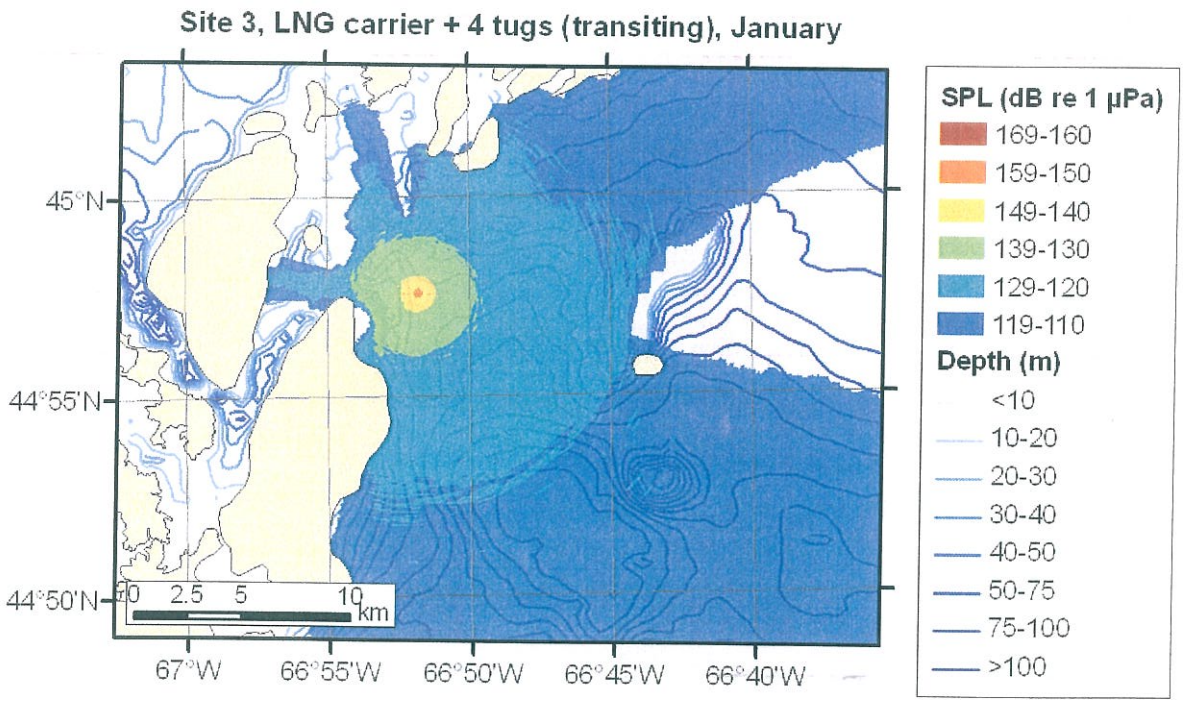


Figure 10. Estimated received sound levels arising from an LNG carrier and four tugs in transit at site 3 (approach to Head Harbour Passage). Note that the small island to the right of the 120 dB contour is an error in the coastline layer; in fact, a series of small islands run along the shallowing visible immediately to the north of this feature. These were correctly represented in the model bathymetry.

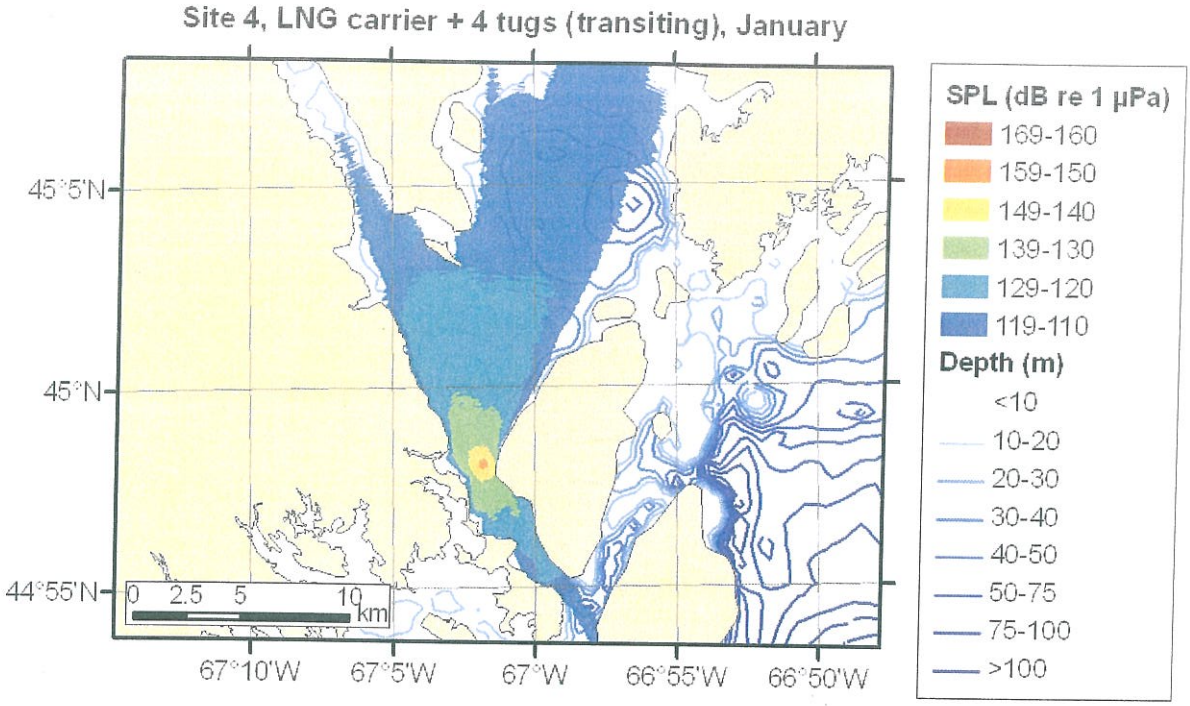


Figure 11. Estimated received sound levels arising from an LNG carrier and four tugs in transit at site 4 (exit from Western Passage).

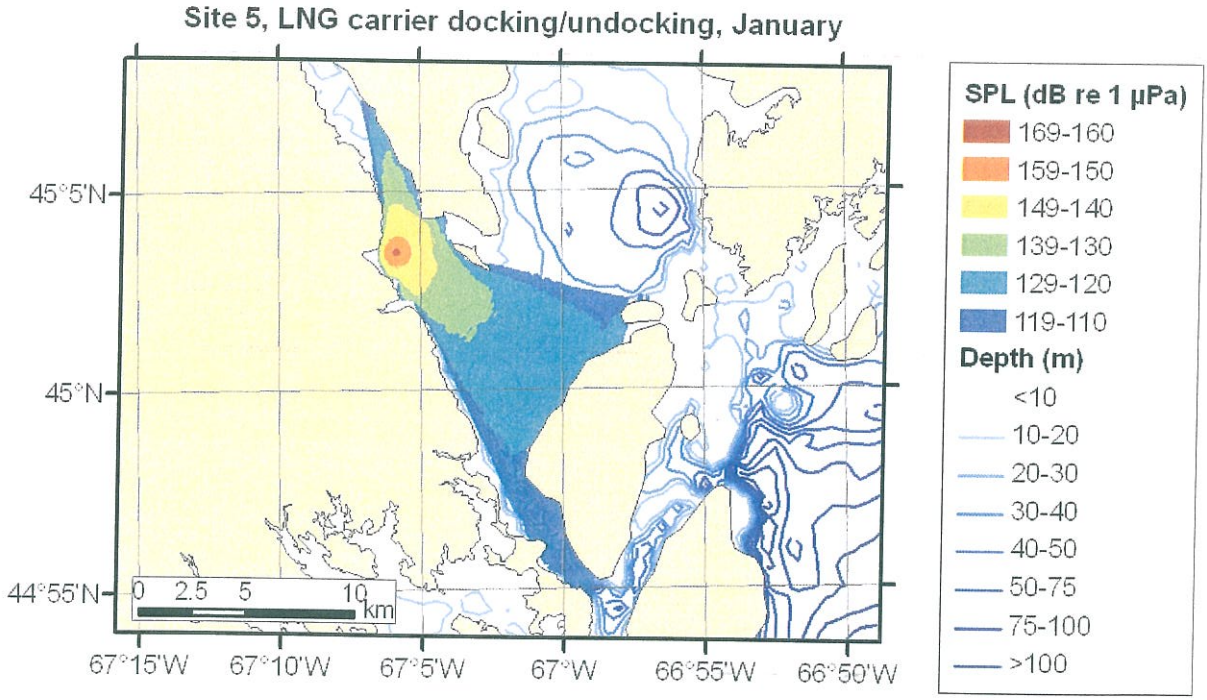


Figure 12. Estimated received sound levels arising from docking/undocking of an LNG carrier at site 5 (Downeast LNG terminal). It is assumed that the LNG carrier is not powered, while three tugs push the carrier and a fourth remains on standby.

Marine Construction and Pile Driving

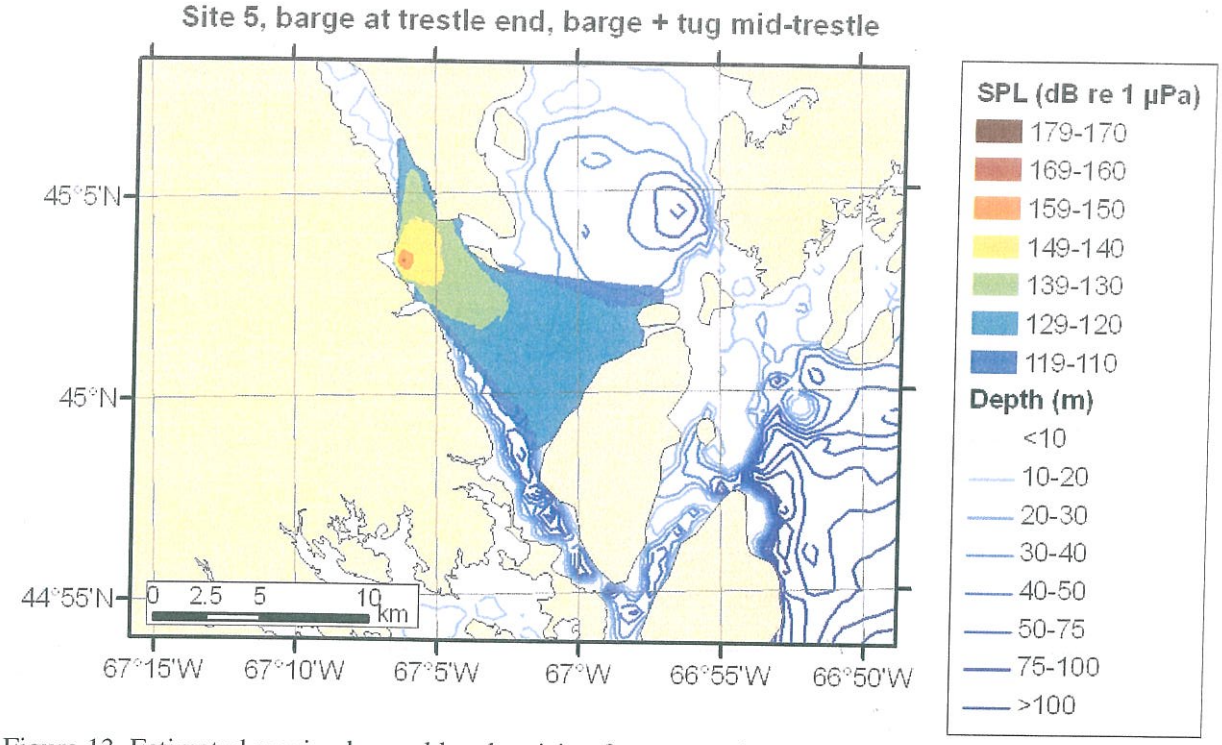


Figure 13. Estimated received sound levels arising from operation of a barge at the end of the trestle, and operation of a barge and tug mid-trestle.

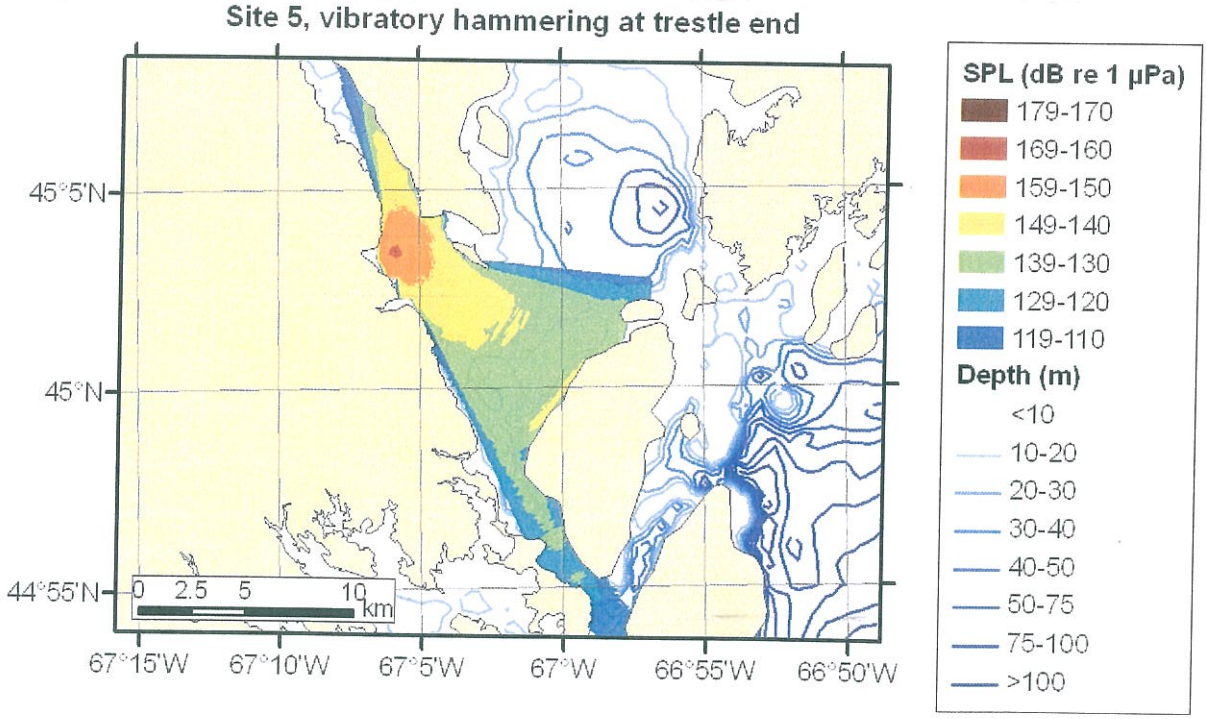


Figure 14. Estimated received sound levels arising from vibratory hammering at the end of the trestle.

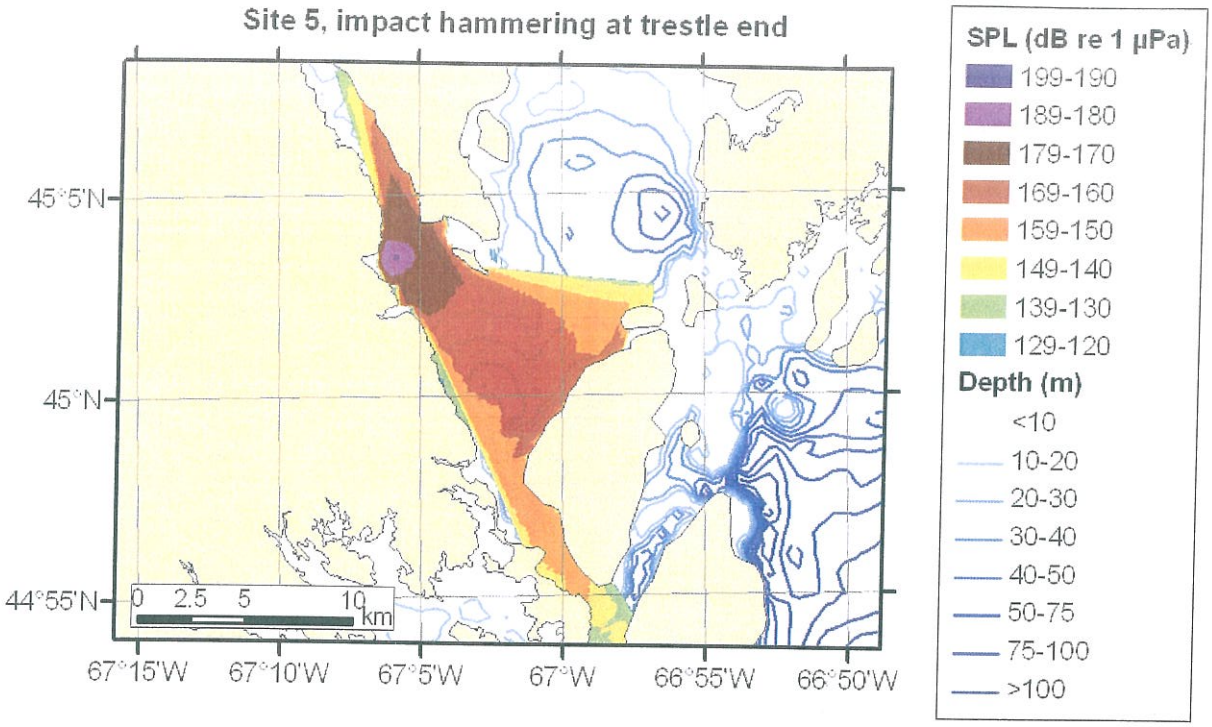


Figure 15. Estimated received sound levels arising from impact hammering at the end of the trestle.

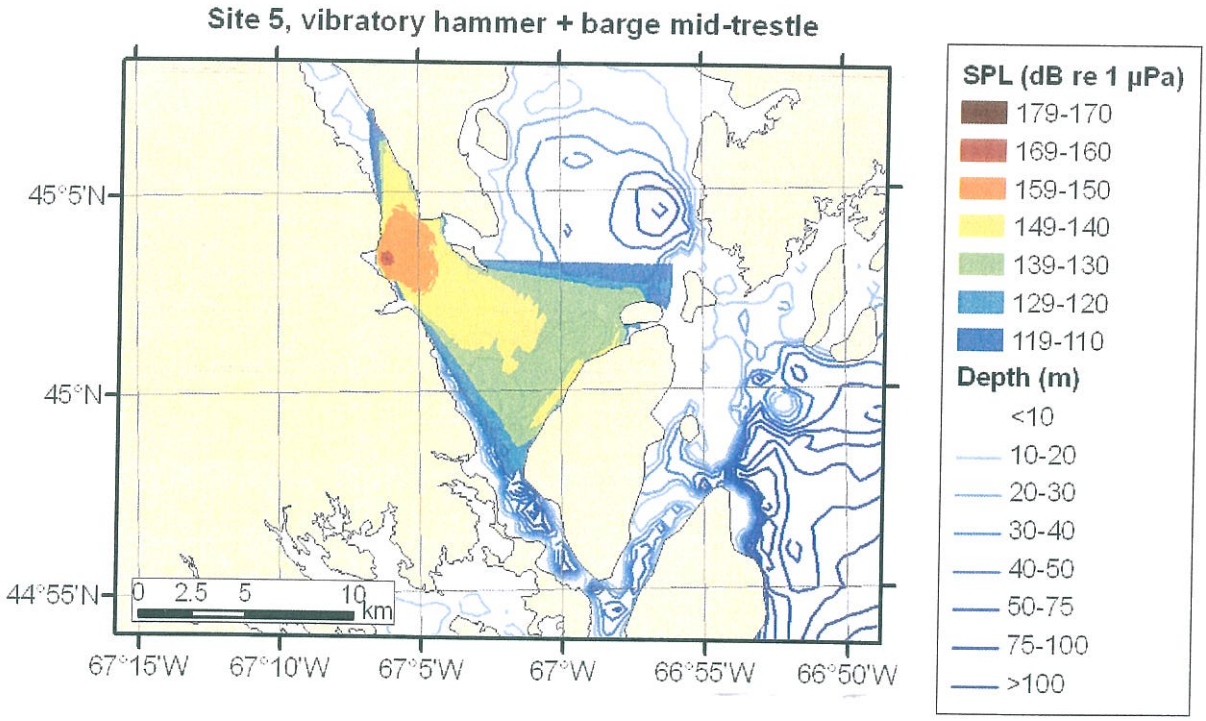


Figure 16. Estimated received sound levels arising from vibratory hammering and operation of a barge mid-trestle.

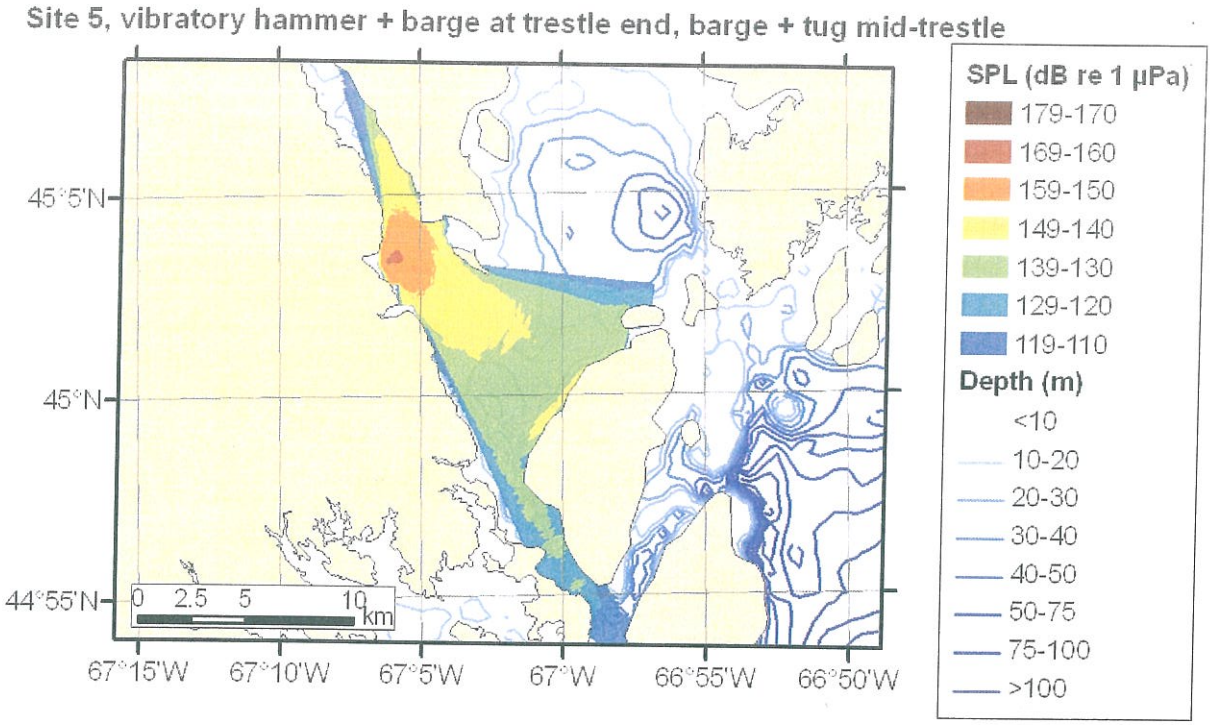


Figure 17. Estimated received sound levels arising from vibratory hammering and operation of a barge at the end of the trestle, and operation of a barge and tug mid-trestle.

Seasonal and Tidal Variability

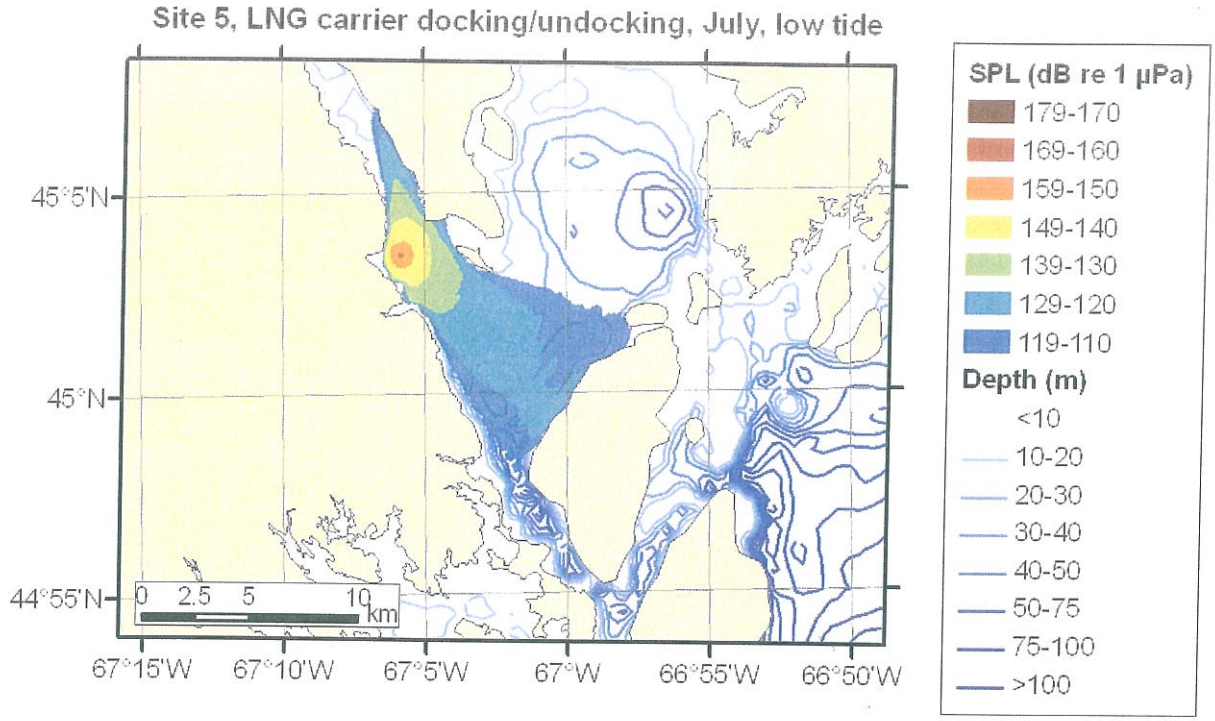


Figure 22. Estimated received sound levels arising from docking/undocking of an LNG carrier at site 5 (Downeast LNG terminal) in July. It is assumed that the LNG carrier is not powered, while three tugs push the carrier and a fourth remains on standby. See also Figure 12 for January results.

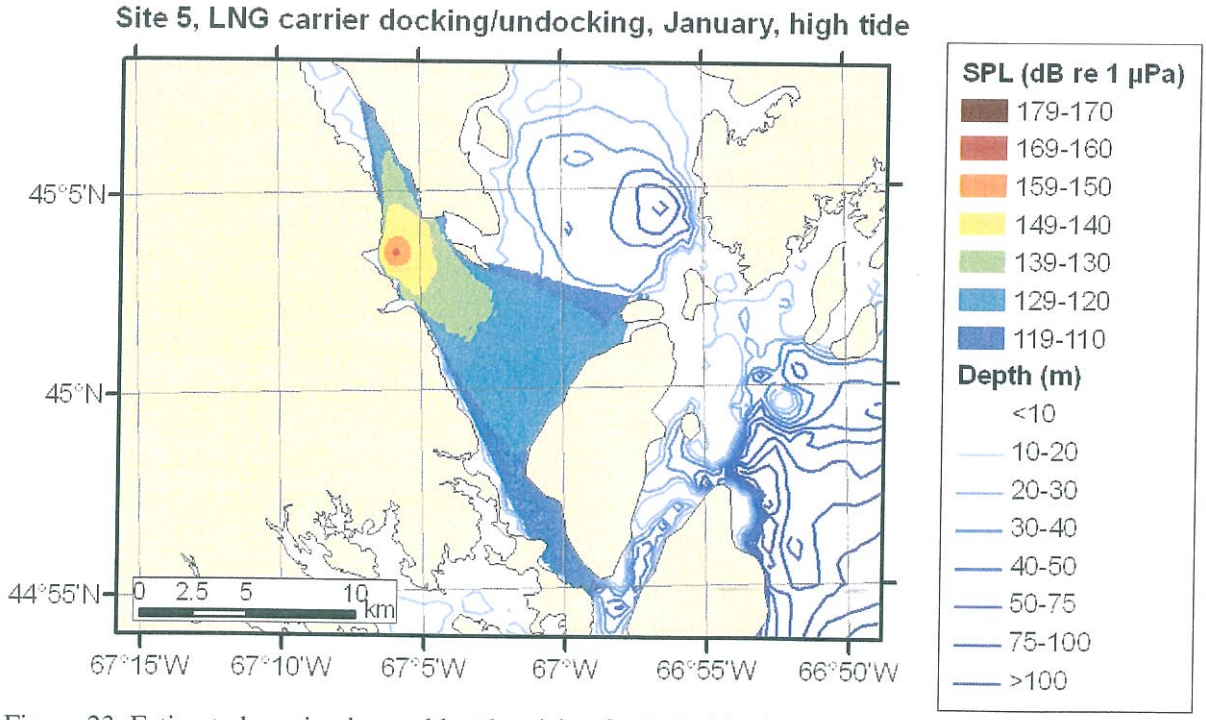


Figure 23. Estimated received sound levels arising from docking/undocking of an LNG carrier at site 5 (Downeast LNG terminal) at high tide. It is assumed that the LNG carrier is not powered, while three tugs push the carrier and a fourth remains on standby. See also Figure 12 for low tide results.

Downeast LNG Import Terminal: Assessment of Underwater Noise Impacts – Addendum

Figure Source: Downeast LNG, Inc. and Downeast Pipeline, LLC (Downeast) Docket Nos. CP07-52-000, CP07-53-000, and CP07-53-001 Downeast LNG Supplemental Information Filing Regarding Underwater Noise Modeling and NOAA Considerations, May 3, 2013. Prepared by Jasco Applied Sciences.

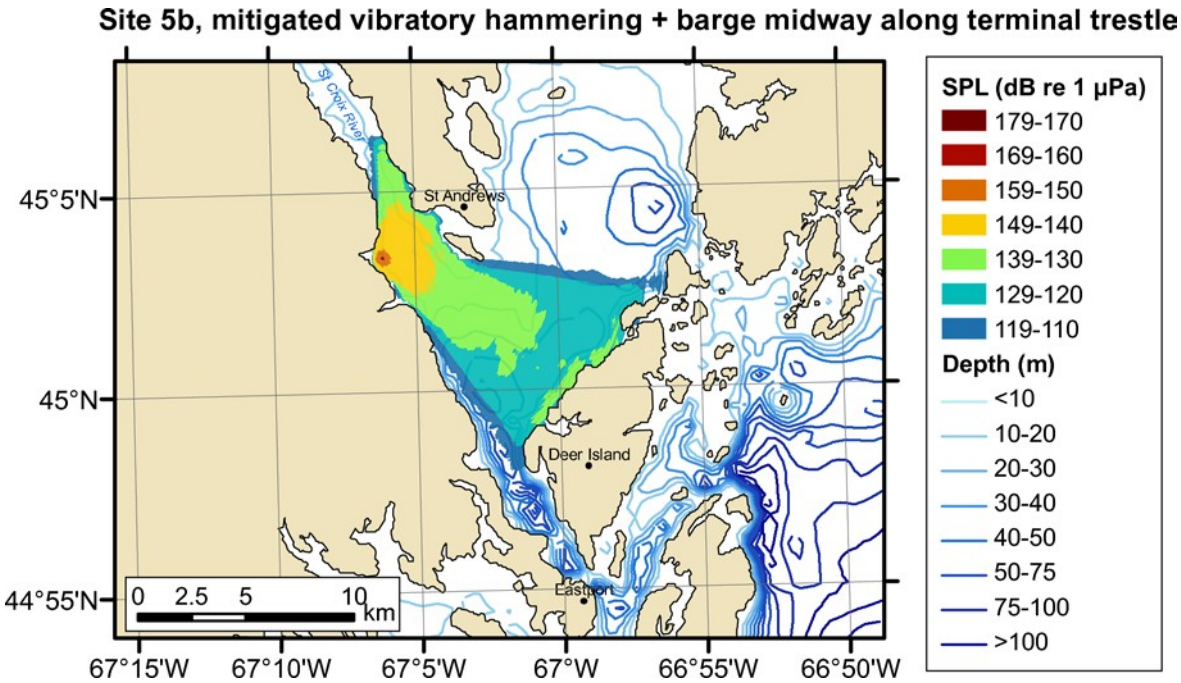


Figure 1. Estimated received sound levels from vibratory hammering and barge operation at midway along the terminal trestle mitigated (with bubble curtain). Source: Figure 5 (Downeast 2013).

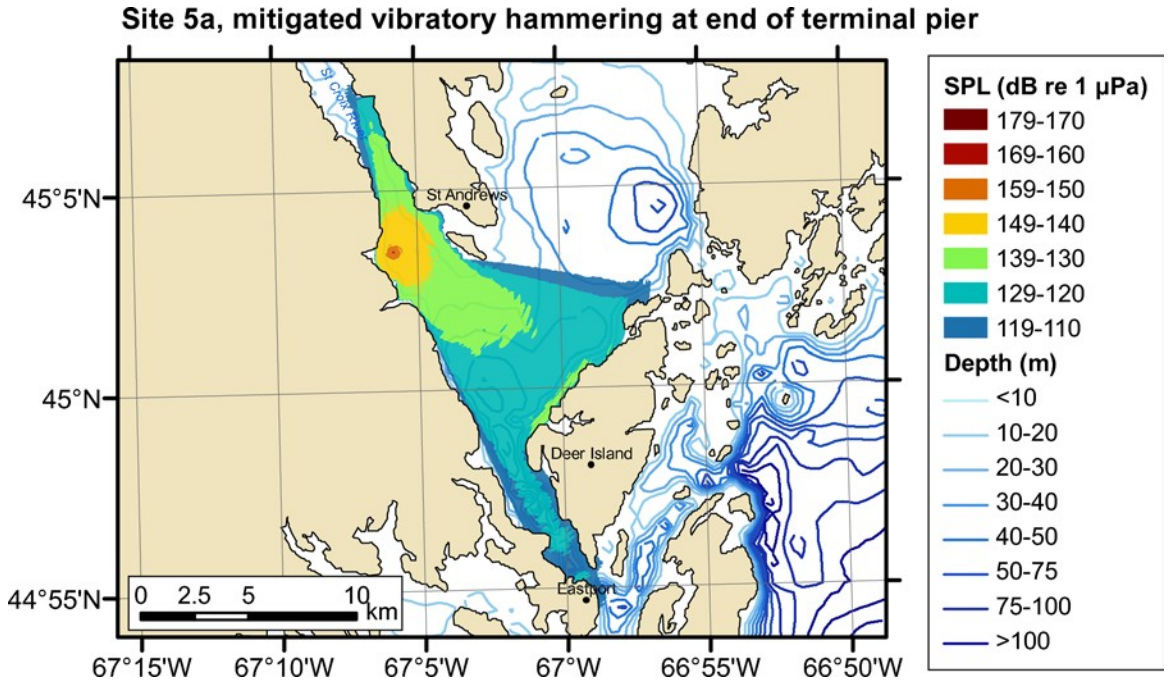


Figure 2. Estimated received sound levels from vibratory hammering at the end of the terminal pier mitigated (with bubble curtain). Source: Figure 6 (Downeast 2013).

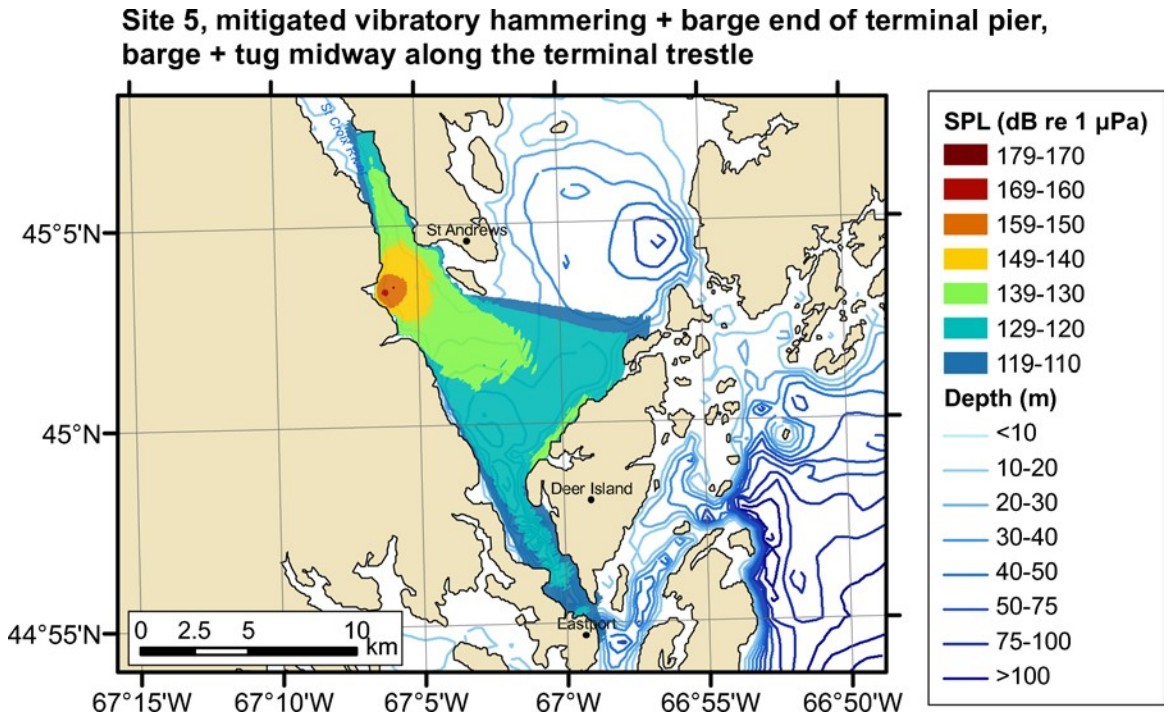


Figure 3. Estimated received sound levels from vibratory hammering and barge operation at the end of the terminal pier, and operation of a barge and tug midway along the terminal mitigated (with bubble curtain). Source: Figure 7 (Downeast 2013).

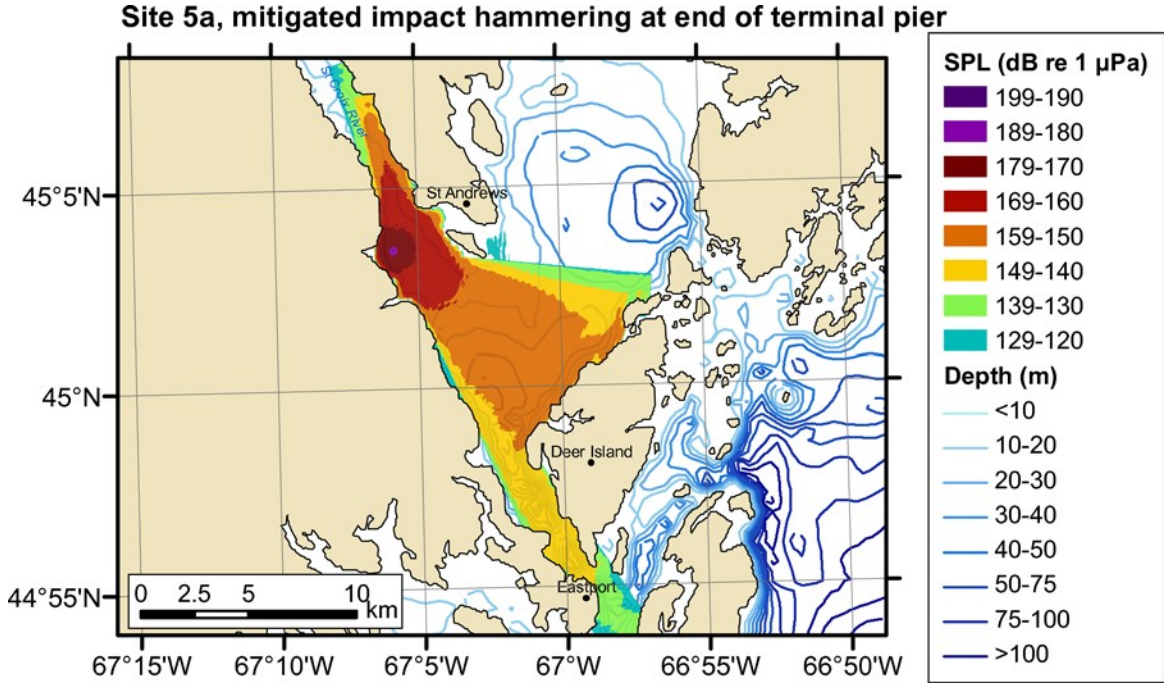


Figure 4. Estimated received sound levels from impact hammering at the end of the terminal pier mitigated (with bubble curtain). Source: Figure 8 (Downeast 2013).