

APPENDIX 3.12-E: HIGH-SPEED RAIL IMPACTS ON CONFINED ANIMAL AGRICULTURE FACILITIES

EXECUTIVE SUMMARY

This appendix examines the potential impacts associated with the Central Valley Wye alternatives as a result of acquisition of confined animal agriculture facilities and waste disposal lands used by confined animal agriculture facilities in Merced and Madera Counties.¹ This appendix is composed of two parts. The first part of this appendix evaluates the impacts of the Central Valley Wye alternatives on confined animal agriculture facilities, including loss of property, loss of capital improvements, parcel severance, and indirect impacts related to on-site wastewater management as a result of displacement of capital improvements. The second part of this appendix evaluates impacts of the Central Valley Wye alternatives on wastewater disposal lands used for wastewater management, both on and off-site. Two attachments follow at the end.

Resource Study Areas

The resource study area (RSA) for the study of confined animal agriculture facilities consists of acreage classified as Confined Animal Agriculture under the Farmland Mapping and Monitoring Program within 100 feet of the high-speed rail (HSR) track centerline. The RSA for impacts on wastewater land application parcels is the set of permitted parcels approved for the confined animal agriculture facilities affected by the Central Valley Wye alternatives.

Confined Animal Agriculture Facilities

Confined animal agriculture facilities in the RSA consist of multiple-parcel facilities, with the parcels sometimes contiguous and sometimes nonadjacent. Facilities in the RSA include both dairies and heifer ranches. Capital improvements include holding facilities, milking facilities, wastewater treatment facilities, and associated storage facilities.

There are nine confined animal agriculture facilities along the State Route (SR) 152 (North) to Road 13 Wye Alternative, five along the SR 152 (North) to Road 19 Wye Alternative, eleven along the Avenue 21 to Road 13 Wye Alternative, and five along the SR 152 (North) to Road 11 Wye Alternative. The figures in Attachment 1, Impacts on Confined Animal Agriculture Facilities, show confined animal agriculture facilities affected by the Central Valley Wye alternatives.

Wastewater Disposal

The RSA for the wastewater disposal lands consists of all lands permitted by the confined animal agriculture facilities affected by the Central Valley Wye alternatives. The figures in Attachment 2, Impacts on Wastewater Disposal Lands, show wastewater disposal lands associated with the confined animal agriculture facilities affected by the Central Valley Wye alternatives.

Methods Used to Evaluate Impacts

The Central Valley Wye alternatives and related improvements would affect several aspects of confined animal agriculture facilities during construction. This section presents the methods used to evaluate impacts on confined animal agriculture facilities.

Construction impacts are direct impacts on confined animal agriculture facilities, impacts on capital improvements, indirect impacts related to on-site wastewater management as a result of displacement of capital improvements, and indirect impacts related to construction noise and vibration. Operations impacts that affect confined animal agriculture facilities are noise and

¹ Some operations have enough cropland on-site to manage their solid waste and wastewater. Other operations must move waste off-site to comply with these regulations. *On-site wastewater management* involves treating wastewater within the footprint of the agricultural facility. *Off-site wastewater management* involves treating wastewater outside the footprint of the agricultural facility, including on adjacent parcels. Solid waste (manure) can also be managed either on-site or off-site.

vibration as a result of Central Valley Wye operation, including train movement. Analysts used the following data sources and approaches to assess impacts:

- Analysts determined direct impacts using data from the Farmland Mapping and Monitoring Program, parcel data provided by the counties, and facility data provided by the Central Valley Regional Water Quality Control Board (Central Valley RWQCB) Sacramento and Fresno offices (Central Valley RWQCB 2011, 2012).
- Analysts determined impacts on capital improvements using aerial imagery and geographic information systems.
- Analysts evaluated the amount of wastewater land affected using Dairy Annual Reports and Land Application Area Maps (Central Valley RWQCB 2011, 2012) and reviewing aerial imagery of wastewater-permitted land to determine the acreage of land with the potential for manure management.
- To assess both construction and operations indirect noise and vibration impacts, the minimum distance from the track centerline required for confined animal holding facilities such as milking facilities is 100 feet, based on the more conservative of the two following metrics: (1) the Federal Railroad Administration–established threshold for HSR noise impacts on livestock of 100 A-weighted decibels sound exposure level at 100 feet, and (2) the Federal Railroad Administration–established threshold for vibration at 75 velocity decibels at 70 feet (Authority 2012).

Impacts range in severity from the potential for relocation of the entire operation or the need to relocate key facilities elsewhere on the operation (e.g., animal holding areas and wastewater treatment ponds) to minor impacts resulting from Central Valley Wye acquisition of land that does not contain any key capital improvement facilities used in the operation. Analysts determined the severity of the impact using the following criteria:

- **Severe**—Operations are unlikely to continue in same location.
- **Moderate**—Relocation of facilities at current location, but operations are likely to continue.
- **Negligible**—No facilities are affected and acquisition of non-facility land would not bisect the operation.

Confined animal agriculture facilities are frequently located on land that is permitted for disposal of wastewater (discussed under *Wastewater Management*), and use cropland on-site to manage their wastewater. Central Valley Wye acquisition of on-site wastewater disposal land could force confined animal agriculture facilities to alter their current manure management plans and thereby create a need to find replacement locations for wastewater and likely result in need for new permits. Confined animal agriculture facilities in the Central Valley, including Merced and Madera Counties, face restrictions on the discharge of wastes from dairy facilities (Central Valley RWQCB 2013). If replacement lands are not available or if it is not economically feasible for an operation to move its wastewater to available lands, facilities would be required to reduce waste production (i.e., reduce the number of animals at the facility).

Confined animal agriculture facilities have two main waste streams: manure and wastewater. The Central Valley RWQCB requires these facilities to file waste disposal management plans. The facilities dispose of both waste streams on croplands permitted by the Central Valley RWQCB, but these two waste streams have different requirements.

Manure is typically spread onto permitted cropping areas. Disposal of manure typically occurs by truck transport from barns to either on-site (i.e., on-facility) or off-site disposal lands.

Wastewater typically requires treatment before being disposed of onto wastewater disposal lands. The most common treatment is detention in a pond or a series of ponds. Detention separates solids from liquids, resulting in clarification of wastewater. Waste disposal plans must include certification of wastewater detention pond capacity by a licensed engineer. Wastewater is distributed onto permitted wastewater land application areas after clarification in the wastewater

treatment ponds. Disposal of wastewater typically occurs via pipelines either on-site or on adjacent parcels permitted as wastewater disposal lands (Central Valley RWQCB 2013). In both cases, the volumes of wastes applied to land cannot exceed the capacity of the land and the crop being grown to absorb the wastes agronomically.

Loss of pond capacity would have the greatest impact because reductions in pond capacity below the level required for a specified herd size require either installation of replacement pond capacity and re-certification of capacity by a licensed engineer, or reduction in herd size. Any substantial project-related reduction in pond capacity would affect confined animal agriculture operational feasibility.

Loss of wastewater disposal lands, if the displacement were too large to be accommodated in the available remaining permitted area of on-site or adjacent wastewater disposal lands, would have a greater impact than loss of lands for solid waste disposal. Pipeline infrastructure is limited, and wastewater disposal options are therefore typically more limited than manure disposal options. If replacement permitted area of on-site or adjacent wastewater disposal is not available, the landowner would be required to build infrastructure or reduce herd size. Any substantial project-related reduction in wastewater disposal capacity would have affect confined animal agriculture operational feasibility.

Loss of any amount of wastewater pond capacity would be a severe impact. Loss of 10 percent of wastewater disposal lands or more would constitute a moderate impact, because the loss would require the operator to make a substantial change in operations, whereas loss of wastewater disposal land area of less than 10 percent would constitute a negligible impact. Replacement of solid waste disposal areas, while subject to Central Valley RWQCB permitting, is typically somewhat less onerous than replacement of wastewater treatment ponds or wastewater disposal lands because it involves little or no construction and engineering cost, and this analysis did not consider it.

CONFINED ANIMAL AGRICULTURAL FACILITIES

This section describes the impacts on each of the confined animal agriculture facilities affected by the Central Valley Wye alternatives. The discussion groups the operations according to severe, moderate, and negligible impacts.

- **Severe**—Operations are unlikely to continue in same location. Criteria include loss of a substantial portion of the facility's acreage, loss of permitted facilities such as wastewater treatment ponds or wastewater application lands, loss of capital improvements, and substantial noise impacts.
- **Moderate**—Relocation of facilities at current location, but operations are likely to continue. Criteria include loss of a portion of the facility's acreage, limited impact on facilities, and moderate noise impacts.
- **Negligible**—No facilities are affected and acquisition of non-facility land would not bisect the operation, limited noise impacts.

Figures in Attachment 1 show the confined animal agriculture facilities affected by the Central Valley Wye alternatives. Table 1 summarizes the impacts by alternative on confined animal agriculture facilities. Table 2 provides a listing of all affected facilities within 100 feet of the track centerline. Table 3 provides a parcel-by-parcel listing of the existing wastewater treatment ponds that would be affected by each alternative. This table provides the total acres of each pond affected as well as the percentage of the pond's area affected. A discussion of each dairy by alternative follows the tables, indicating whether the impacts are severe, moderate, or negligible.

Table 1 Impacts on Confined Animal Agricultural Facilities by Alternative

Alternative	Number of Dairies		
	Severe	Moderate	Negligible
SR 152 (North) to Road 13 Wye	2	3	4
SR 152 (North) to Road 19 Wye	1	1	3
Avenue 21 to Road 13 Wye	1	4	7
SR 152 (North) to Road 11 Wye	2	1	2

Source: Madera County Assessor's Office, 2014; Merced County Assessor's Office, 2014

Table 2 Affected Confined Animal Agricultural Facilities

Attachment Page #	Facility Name	County	Total Facility Acreage	Number of Acres Affected	Number of Acres Remaining	Percentage of Facility Affected	Capital Improvements Affected	Severity of Impact (construction/operation)
SR 152 (North) to Road 13 Wye Alternative								
E1-1	AJF Dairy	Madera	552	104	447	18.9	Wastewater treatment ponds Animal holding areas Associated storage facilities	Severe (Construction)/ Negligible (Operation)
E1-2	Tony Machado Dairy	Madera	176	15	162	8.3	Wastewater treatment ponds Animal holding facilities Feed lots Associated storage facilities	Severe (Construction)/ Moderate (Operation)
E1-3	Domingos Ribeiro Dairy	Madera	252	32	220	12.8	--	Moderate (Construction)/ Negligible (Operation)
E1-4	Brasil Dairy	Merced	303	28	275	9.2	Animal holding facilities Associated storage facilities	Moderate (Construction)/ Negligible (Operation)
E1-5	Fagundes Dairy	Madera	2,263	85	2,178	3.8	--	Moderate (Construction)/ Moderate (Operation)
E1-6	Vitoria Farms Dairy	Madera	213	22	191	10.2	--	Negligible (Construction)/ Negligible (Operation)
E1-7	Double DJ Farms Dairy	Madera	1,805	36	1,770	2.0	--	Negligible (Construction)/ Negligible (Operation)

Attachment Page #	Facility Name	County	Total Facility Acreage	Number of Acres Affected	Number of Acres Remaining	Percentage of Facility Affected	Capital Improvements Affected	Severity of Impact (construction/operation)
E1-8	O'Banion Ranches	Merced	323	2	321	0.7	--	Negligible (Construction)/ Negligible (Operation)
E1-9	De Jager Dairy So.	Merced	2,824	5	2,819	0.2	--	Negligible (Construction)/ Negligible (Operation)
SR 152 (North) to Road 19 Wye Alternative								
E1-1	AJF Dairy	Madera	552	58	494	10.5	Wastewater treatment ponds Animal holding areas Associated storage facilities	Severe (Construction)/ Negligible (Operation)
E1-4	Brasil Dairy	Merced	303	28	275	9.3	Animal holding facilities Associated storage facilities	Moderate (Construction)/ Negligible (Operation)
E1-10	De Jager Dairy #2 North	Merced	1,467	48	1,419	3.3	--	Negligible (Construction)/ Moderate (Operation)
E1-5	Fagundes Dairy	Madera	2,263	22	2,241	1.0	--	Negligible (Construction)/ Negligible (Operation)
E1-8	O'Banion Ranches	Merced	323	2	321	0.7	--	Negligible (Construction)/ Negligible (Operation)

Attachment Page #	Facility Name	County	Total Facility Acreage	Number of Acres Affected	Number of Acres Remaining	Percentage of Facility Affected	Capital Improvements Affected	Severity of Impact (construction/operation)
Avenue 21 to Road 13 Wye Alternative								
E1-11	Antonio Brasil Dairy	Merced	257	12	245	4.7	Parcel bisection	Severe (Construction)/ Negligible (Operation)
E1-8	O'Banion Ranches	Merced	323	48	275	14.9	--	Moderate (Construction)/ Negligible (Operation)
E1-12	Joe Bertao & Sons Dairy	Madera	311	32	280	10.2	--	Moderate (Construction)/ Negligible (Operation)
E1-13	Alfred Soares Dairy	Madera	189	15	174	8.1	Feed storage lots	Moderate (Construction)/ Negligible (Operation)
E1-3	Domingos Ribeiro Dairy	Madera	252	17	236	6.6	--	Moderate (Construction)/ Negligible (Operation)
E1-9	De Jager Dairy So.	Merced	2,824	5	2,819	0.2	--	Negligible (Construction)/ Negligible (Operation)
E1-14	Vlot Dairy & Heifer Ranch	Madera	1,791	90	1,701	5.0	--	Negligible (Construction)/ Negligible (Operation)
E1-15	Costa View #4 Dairy	Madera	267	7	259	2.7	--	Negligible (Construction)/ Negligible (Operation)
E1-16	Troost Dairy	Madera	878	18	860	2.1	--	Negligible (Construction)/ Negligible (Operation)
E1-7	Double DJ Farms Dairy	Madera	1,805	37	1,769	2.0	--	Negligible (Construction)/ Negligible (Operation)

Attachment Page #	Facility Name	County	Total Facility Acreage	Number of Acres Affected	Number of Acres Remaining	Percentage of Facility Affected	Capital Improvements Affected	Severity of Impact (construction/operation)
E1-5	Fagundes Dairy	Madera	2,263	29	2,234	1.3	--	Negligible (Construction)/ Negligible (Operation)
E1-17	Frank Parreira Dairy	Madera	197	1	196	0.5	--	Negligible (Construction)/ Negligible (Operation)
SR 152 (North) to Road 11 Wye Alternative								
E1-1	AJF Dairy	Madera	552	130	422	24.6	Wastewater treatment ponds Animal holding areas Associated storage facilities	Severe (Construction)/ Negligible (Operation)
E1-5	Fagundes Dairy	Madera	2,263	60	2,203	2.7	--	Severe (Construction)/ Negligible (Operation)
E1-4	Brasil Dairy	Madera	303	23	280	7.6	--	Moderate (Construction)/ Negligible (Operation)
E1-8	O'Banion Ranches	Merced	323	2	321	0.7	--	Negligible (Construction)/ Negligible (Operation)
E1-9	De Jager Dairy So.	Merced	2,824	<1	2,823	<0.1	--	Negligible (Construction)/ Negligible (Operation)

Source: Merced County Assessor's Office, 2014; Madera County Assessor's Office, 2014

¹ Geographic information system analysis determined that the acres of property affected by the Central Valley Wye alternatives would not differ between alternatives within this area.

² For severed properties where the remainder parcel is less than 20 acres, it is assumed that the Authority proposes to acquire the entire remainder parcel. For severed properties where the remainder parcel is greater than 20 acres, it is assumed that the Authority does not propose to acquire the remainder parcel. This assumption is based on guidance provided by the Parsons Brinkerhoff Memorandum dated May 22, 2014 (Parsons Brinkerhoff 2014).

E1 = Appendix 3.12-E, Attachment 1

E2 = Appendix 3.12-E, Attachment 2

APN = Assessor's Parcel Number

= number

SR = State Route

Table 3 Affected Wastewater Treatment Ponds by Alternative

APN	Type of Facility	SR 152 (North) to Road 13 Wye			SR 152 (North) to Road 19 Wye			Avenue 21 to Road 13 Wye			SR 152 (North) to Road 11 Wye		
		Pond Size	Total Acres Affected	Percentage of Pond Affected	Pond Size	Total Acres Affected	Percentage of Pond Affected	Pond Size	Total Acres Affected	Percentage of Pond Affected	Pond Size	Total Acres Affected	Percentage of Pond Affected
Tony Machado Dairy													
025210006000	Wastewater Storage	0.5	0.4	85.2	--	--	--	--	--	--	--	--	--
025210006000	Wastewater Storage	0.6	0.2	38.0	--	--	--	--	--	--	--	--	--
025210005000	Wastewater Storage	0.5	0.01	2.6	--	--	--	--	--	--	--	--	--
AJF Dairy													
025200004000	Wastewater Storage	1.5	1.5	100.0	--	--	--	--	--	--	1.5	0.45	30.0
025200004000	Solid Settling Basin	0.3	0.3	100.0	1.5	0.01	0.6	--	--	--	--	--	--
025190007000	Wastewater Storage	2.2	0.1	4.4	--	--	--	--	--	--	2.2	2.2	100.0

Source: Merced County Assessor's Office, 2014; Madera County Assessor's Office, 2014; Central Valley RWQCB, 2011, 2012

APN = Assessor's Parcel Number

SR = State Route

SR 152 (North) to Road 13 Wye Alternative

Severe Impacts

AJF Dairy

AJF Dairy in Madera County would experience severe impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-1 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 104 acres of land, or 18.9 percent of the property on the northeastern portion of the westernmost parcel and the western edge of the easternmost parcel, and would bisect this property (Table 2). The alternative would displace about 24.4 acres on the northeastern portion of the property, which contains animal holding areas, associated facilities, and a wastewater treatment pond on Assessor's Parcel Number (APN) 025200004000. Following the HSR acquisition process, 447 acres of unaffected land would remain in four discontinuous parcels. All of the capital improvements would need to be relocated as a result. Relocating the treatment pond would require the dairy operator to acquire a permit from the Central Valley RWQCB, which would be both expensive and time consuming.

The remaining parcels would have sufficient acreage to relocate the facilities at a distance greater than 100 feet from the HSR track centerline. Thus, indirect noise and vibration impacts would be negligible.

Tony Machado Dairy

Tony Machado Dairy in Madera County would experience severe impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-2 shows the boundaries of this dairy and the alternative alignment. The alternative would bisect the property and would require the acquisition of 15 acres of land, or 8.3 percent of the northeastern portion of the property (Table 2). The affected land contains a large percentage of the property's animal holding facilities, feed lots, associated storage facilities, and a wastewater treatment pond on APN 025210006000. Relocating the facilities and treatment pond would require approximately 1.4 acres of land and would require acquisition of a permit for the new treatment pond from the Central Valley RWQCB. Following the HSR acquisition process, there would be 162 acres of land remaining, much of which is used for wastewater land application. Due to the facilities affected and the current use of the available unaffected acreage, it is likely that the operator would need to relocate or largely reconfigure this dairy, with associated new permits, in order to continue operation.

If the dairy is not relocated but facilities are rearranged on the current parcel, any holding areas reestablished would likely still be within 100 feet of the HSR track centerline. Thus, indirect noise and vibration impacts would be moderate.

Moderate Impacts

Domingos Ribeiro Dairy

Domingos Ribeiro Dairy in Madera County would experience moderate impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, Page E1-3 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 32 acres of land, or 12.8 percent of a central portion of the property (Table 2) on APNs 025140007000, 025140004000, and 025150011000, bisecting the property. While the alternative would not directly affect capital improvements, it would cut them off from much of the remainder of the dairy. Following the HSR acquisition process, 220 acres of land would remain in disconnected properties. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be about 1,000 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Brasil Dairy

Brasil Dairy in Merced County would experience moderate impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-4 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 28 acres of land, or 9.2 percent of the property (Table 2) on the eastern portion of the property, which contains holding facilities, feed storage lots, and associated buildings on APN 074160040000. Following the HSR acquisition process, 275 acres of adjacent continuous land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The construction impact on this facility is moderate because of impacts on capital improvements.

The HSR track centerline would be within 100 feet of the closest cattle holding area. Thus, indirect noise and vibration impacts would be moderate.

Fagundes Dairy

Fagundes Dairy in Madera County would experience moderate impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-5 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 85 acres of land, or 3.8 percent of the property (Table 2). The alternative would affect capital improvements on multiple parcels. Following the HSR acquisition process, 2,178 acres of land would remain. There appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The construction impact on this facility would be moderate.

The distance of the HSR track centerline from the closest cattle holding area varies by parcel. In some cases, the remainder parcel is small enough that the displaced holding facility would have to be rebuilt within 100 feet of the centerline. Thus, indirect noise and vibration impacts would be moderate.

Negligible Impacts

Vitoria Farms Dairy

Vitoria Farms Dairy in Madera County would experience negligible impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-6 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 22 acres of land, or 10.2 percent of the property (Table 2) in the western portion of the property on APN 025140006000. Following the HSR acquisition process, 191 acres of land would remain, although the alignment would bisect it. However, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be about 800 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Double DJ Farms Dairy

Double DJ Farms Dairy in Madera County would experience negligible impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-7 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 36 acres of land, or 2.0 percent of the property (Table 2) on APNs 025030002000 and 025030007000. Following the HSR acquisition process, 1,770 acres of adjacent continuous land would remain. There is sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be more than 1 mile from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

O'Banion Ranches

O'Banion Ranches in Merced County would experience negligible impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-8 shows the boundaries

of this dairy and the alternative alignment. The alternative would require the acquisition of 2 acres of land, or 0.7 percent of the property (Table 2) on APNs 085270020 and 085370008. Following the HSR acquisition process, 321 acres of land would remain. The alternative would affect no capital improvements. There is sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be approximately 1,500 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

De Jager Dairy So.

De Jager Dairy So. in Merced County would experience negligible impacts from construction of the SR 152 (North) to Road 13 Wye Alternative. Attachment 1, page E1-9 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 5 acres of land of the easternmost portion of the property, or 0.2 percent of the property (Table 2) on APN 075100024. Following the HSR acquisition process, 2,819 acres of adjacent continuous land would remain. The alternative would affect no capital improvements. There is sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be about 1 mile from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

SR 152 (North) to Road 19 Wye Alternative

Severe Impacts

AJF Dairy

Impacts would be the same under the SR 152 (North) to Road 19 Wye Alternative as under the SR 152 (North) to Road 13 Wye Alternative, except that the alternative would require the acquisition of 58 acres of land, or 10.5 percent of the property, and following the acquisition process, 494 acres of unaffected land would remain. The construction impact on this facility would be severe, and the operations impact would be negligible.

Moderate Impacts

Brasil Dairy

Impacts would be the same under the SR 152 (North) to Road 19 Wye Alternative as under the SR 152 (North) to Road 13 Wye Alternative, except that the alternative would require the acquisition of 28 acres of land, or 9.3 percent of the property (Table 2), and following the acquisition process, 275 acres of unaffected land would remain. The construction impact on this facility would be moderate, and the operations impact would be moderate.

Negligible Impacts

De Jager Dairy #2 North

De Jager Dairy #2 North in Merced County would experience negligible impacts from construction of the SR 152 (North) to Road 19 Wye Alternative. Attachment 1, page E1-10 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 48 acres of land, or 3.3 percent of the property (Table 2) on the northern portion of the property, bisecting the property comprising APNs 075110047 and 075110021. Following the HSR acquisition process, 1,419 acres of land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be adjacent to the closest cattle holding area. Thus, indirect noise and vibration impacts would be moderate.

Fagundes Dairy

Impacts would be the same under the SR 152 (North) to Road 19 Wye Alternative as under the SR 152 (North) to Road 13 Wye Alternative, except that the alternative would require the

acquisition of 22 acres of land, or 1.0 percent of the property (Table 2), and following the acquisition process, 2,241 acres of unaffected land would remain. Both construction and operations impacts on this facility would be negligible.

O'Banion Ranches

Impacts would be the same under the SR 152 (North) to Road 19 Wye Alternative as under the SR 152 (North) to Road 13 Wye Alternative, except that the alternative would require the acquisition of 2 acres of land, or 0.7 percent of the property (Table 2), and following the acquisition process, 321 acres of unaffected land would remain. Both construction and operations impacts on this facility would be negligible.

Avenue 21 to Road 13 Wye Alternative

Severe Impacts

Antonio Brasil Dairy

Antonio Brasil Dairy in Merced County would experience severe impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-11 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 12 acres of land, or 4.7 percent of the property (Table 2) consisting of APN 074170004. The affected land contains animal holding facilities that the alternative would displace, and separate associated storage facilities including wastewater treatment ponds on the southern portion of the operation from the remainder of the property. Following the HSR acquisition process, 245 acres of land would remain, all of which is permitted for land application of wastewater. Due to the number of facilities affected and the permitted use of the available unaffected acreage, even if facilities were rearranged on the remaining parcel, it is likely that disposal of wastewater would be affected, and therefore the dairy would need to apply for a new permit. Because of the capital improvements affected and the configuration of the land affected, the construction impact on this facility would be severe.

The remaining parcel would have sufficient acreage for the cattle holding areas to be relocated at a distance greater than 100 feet from the HSR track centerline. Thus, noise and vibration impacts would be negligible.

Moderate Impacts

O'Banion Ranches

O'Banion Ranches in Merced County would experience moderate impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-8 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 48 acres of land on APNs 085270020 and 085370008, bisecting these parcels, or 14.9 percent of the dairy (Table 2). Following the HSR acquisition process, including acquisition of a holding facility, 275 acres of land would remain. There is sufficient available unaffected acreage to enable the dairy to continue operation.

There would be sufficient space on the remaining facility to construct a new holding facility 100 feet from the HSR track centerline. Thus, indirect noise and vibration impacts would be negligible.

Joe Bertao & Sons Dairy

Joe Bertao & Sons Dairy in Madera County would experience moderate impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-12 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 32 acres of land on all parcels, affecting primarily APNs 024060028000 and 024060025000, or 10.2 percent of the dairy (Table 2), ultimately bisecting the dairy. Following the HSR acquisition process, 280 acres of land would remain. The alternative would affect no capital improvements. There is sufficient available unaffected acreage to enable the dairy to continue

operation. The construction impact on this facility would be moderate because the alternative would bisect the dairy.

The HSR track centerline would be approximately 300 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Alfred Soares Dairy

The Alfred Soares Dairy would experience moderate impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-13 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 15 acres of land, or 8.1 percent of the property (Table 2) on the very southern portion of the property, which contains feed storage lots on APN 021040008000 and feed storage lots and associated buildings on APN 021040009000. Following the HSR acquisition process, 174 acres of land would remain. The impact would be moderate because the alternative would affect capital improvements.

The HSR track centerline would be more than 500 feet from the closest cattle holding area on APN 021040008000 and about 255 feet from the closest cattle holding area on APN 021040009000. Therefore, indirect noise and vibration impacts would be negligible.

Domingos Ribeiro Dairy

Domingos Ribeiro Dairy in Madera County would experience moderate impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-3 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 17 acres of land, or 6.6 percent of a central portion of the property (Table 2) on APNs 025140007000, 025140004000, and 025150011000, bisecting the property. While the alternative would not directly affect capital improvements, it would cut them off from much of the remainder of the dairy. Following the HSR acquisition process, 236 acres of land would remain in disconnected properties. The construction impact on this facility would be moderate because the alternative would cut off capital improvements from the remainder of the dairy.

The HSR track centerline would be about 1,000 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Negligible Impacts

De Jager Dairy So.

De Jager Dairy So. in Merced County would experience negligible impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-9 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 5 acres of land on the easternmost portion of the property, or 0.2 percent of the property (Table 2) on APN 075100024. Following the HSR acquisition process, 2,819 acres of adjacent continuous land would remain. The alternative would not affect capital improvements. There is sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be about 1 mile from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Vlot Dairy & Heifer Ranch

Vlot Dairy & Heifer Ranch in Madera County would experience negligible impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-14 shows the boundaries of this facility and the alternative alignment. The alternative would require the acquisition of 90 acres of land, or 5.0 percent of the property (Table 2) on the eastern edge of APNs 020120003 and 020150006. Following the HSR acquisition process, 1,701 acres of land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be more than 500 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Costa View #4 Dairy

Costa View #4 Dairy in Madera County would experience negligible impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-15 shows the boundaries of this facility and the alternative alignment. The alternative would require the acquisition of 7 acres of land, or 2.7 percent of the property (Table 2), specifically the northeastern and southeastern corners of APN 024060031000. Following the HSR acquisition process, 259 acres of land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be about 3,000 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Troost Dairy

Troost Dairy in Madera County would experience negligible impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-16 shows the boundaries of this facility and the alternative alignment. The alternative would require the acquisition of 18 acres of land, or 2.1 percent of the property (Table 2), specifically the southern and eastern edges of APN 024120011000. Following the HSR acquisition process, 860 acres of land would remain. The alternative would affect no capital improvements. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

No cattle holding areas are currently present on the parcel affected, and the parcel is not contiguous with any other parcels associated with this dairy. Thus, indirect noise and vibration impacts would be negligible.

Double DJ Farms Dairy

Double DJ Farms Dairy in Madera County would experience negligible impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-7 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 36.7 acres of land, or 2.0 percent of the property (Table 2) on APNs 025030002000, and 025030007000. Following the HSR acquisition process, 1,769 acres of adjacent continuous land would remain. There is sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be more than 1 mile from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Fagundes Dairy

Fagundes Dairy in Madera County would experience negligible impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-5 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 29 acres of land, or 1.3 percent of the property (Table 2) on APN 025210011000. Following the HSR acquisition process, 2,234 acres of land would remain. There appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be more than 1 mile from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

Frank Parreira Dairy

Frank Parreira Dairy in Madera County would experience negligible impacts from construction of the Avenue 21 to Road 13 Wye Alternative. Attachment 1, page E1-17 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 1 acre of land, or 0.5 percent of the property (Table 2) on APN 027212008000. Following the HSR acquisition process, 196 acres of land would remain. There appears to be sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be more than 4,000 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

SR 152 (North) to Road 11 Wye Alternative

Severe Impacts

AJF Dairy

AJF Dairy in Madera County would experience severe impacts from construction of the SR 152 (North) to Road 11 Wye Alternative. Attachment 1, page E1-1 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 130 acres of land, or 24.6 percent of the property on the northeastern portion of the westernmost parcel and the southern edge of the easternmost parcels, and would bisect this property (Table 2). The alternative would displace about 20.2 acres on the northeastern portion of the property, which contains animal holding areas, associated facilities, and a wastewater treatment pond on APN 025200004000. Following the HSR acquisition process, 422 acres of unaffected land would remain in four discontinuous parcels. All of the capital improvements would need to be relocated as a result. Relocating the treatment pond would require the dairy operator to acquire a permit from the Central Valley RWQCB, which would be both expensive and time consuming.

The remaining parcels would have sufficient acreage to relocate the facilities at a distance greater than 100 feet from the HSR track centerline. Thus, indirect noise and vibration impacts would be negligible.

Fagundes Dairy

Fagundes Dairy in Madera County would experience moderate impacts from construction of the SR 152 (North) to Road 11 Wye Alternative. Attachment 1, page E1-5 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 60 acres of land, or 2.7 percent of the property (Table 2). The alternative would affect capital improvements on multiple parcels. Following the HSR acquisition process, 2,203 acres of land would remain. There appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The construction impact on this facility would be moderate.

The distance of the HSR track centerline from the closest cattle holding area varies by parcel. In some cases, the remainder parcel is small enough that the displaced holding facility would have to be rebuilt within 100 feet of the centerline. Thus, indirect noise and vibration impacts would be moderate.

Moderate Impacts

Brasil Dairy

Brasil Dairy in Merced County would experience moderate impacts from construction of the SR 152 (North) to Road 11 Wye Alternative. Attachment 1, page E1-4 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 23 acres of land, or 7.6 percent of the property (Table 2) on the eastern portion of the property, which contains holding facilities, feed storage lots, and associated buildings on APN 074160040000. Following the HSR acquisition process, 280 acres of adjacent continuous land would remain. Thus, there appears to be sufficient available unaffected acreage to enable the dairy to continue operation. The construction impact on this facility would be moderate because of impacts on capital improvements.

The HSR track centerline would be within 100 feet of the closest cattle holding area. Thus, indirect noise and vibration impacts would be moderate.

Negligible Impacts

O'Banion Ranches

O'Banion Ranches in Merced County would experience negligible impacts from construction of the SR 152 (North) to Road 11 Wye Alternative. Attachment 1, page E1-8 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of 2 acres of land, or 0.7 percent of the property (Table 2) on APN 085270020. Following the HSR acquisition process, 321 acres of land would remain. The alternative would affect no capital improvements. There is sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be approximately 1,500 feet from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

De Jager Dairy So.

De Jager Dairy So. in Merced County would experience negligible impacts from construction of the SR 152 (North) to Road 11 Wye Alternative. Attachment 1, page E1-9 shows the boundaries of this dairy and the alternative alignment. The alternative would require the acquisition of less than 1 acre of land of the easternmost portion of the property, or less than 0.1 percent of the property (Table 2) on APN 075100024. Following the HSR acquisition process, 2,823 acres of adjacent continuous land would remain. The alternative would affect no capital improvements. There is sufficient available unaffected acreage to enable the dairy to continue operation.

The HSR track centerline would be about 1 mile from the closest cattle holding area. Thus, indirect noise and vibration impacts would be negligible.

WASTEWATER TREATMENT AND WASTEWATER APPLICATION LANDS

The tables in this section show wastewater treatment ponds and agricultural land used for wastewater application, including disposal of solid waste, as identified by the Central Valley RWQCB (Central Valley RWQCB 2011, 2012).

Table 4 provides a summary by dairy of the existing wastewater application areas that would be affected by each alternative. Attachment 2 shows affected parcels permitted for wastewater disposal associated with each confined animal agriculture facility.

Table 4 Affected On-Site Wastewater Lands by Alternative

Dairy	On-Site Wastewater Application Area (acres)	SR 152 (North) to Road 13 Wye		SR 152 (North) to Road 19 Wye		Avenue 21 to Road 13 Wye		SR 152 (North) to Road 11 Wye	
		On-Site Wastewater Application Area Affected (acres)	Percentage of Area Affected	On-Site Wastewater Application Area Affected (acres)	Percentage of Area Affected	On-Site Wastewater Application Area Affected (acres)	Percentage of Area Affected	On-Site Wastewater Application Area Affected (acres)	Percentage of Area Affected
Merced County									
Antonio Brasil Dairy	257	-	-	-	-	12	4.7	-	-
De Jager Dairy #2 North	1,467	-	-	48	3.3	-	-	-	-
De Jager Dairy So.	2,824	5	18.9	-	-	5	0.2	<1	<0.1
O'Banion Ranches	323	2	0.7	2	0.7	48	14.9	2	0.7
Madera County									
AJF Dairy	552	104	18.9	58	10.5	-	-	130	24.6
Alfred Soares Dairy	189	-	-	-	-	15	8.1	-	-
Brasil Dairy	303	28	9.2	28	9.3	-	-	23	7.6
Costa View #4 Dairy	267	-	-	-	-	7	2.7	-	-
Domingos Ribeiro Dairy	252	32	12.8	-	-	17	6.6	-	-
Double DJ Farms Dairy	1,805	36	2.0	-	-	37	2.0	-	-
Fagundes Dairy	2,263	85	3.8	22	1.0	29	1.3	60	2.7
Frank Parreira Dairy	197	-	-	-	-	1	0.5	-	-
Joe Bertao & Sons Dairy	311	-	-	-	-	32	10.2	-	-
Tony Machado Dairy	176	15	8.3	-	-	-	-	-	-
Troost Dairy	878	-	-	-	-	18	2.1	-	-
Vitoria Farms Dairy	213	22	10.2	-	-	-	-	-	-
Vlot Dairy & Heifer Ranch	1,791	-	-	-	-	90	5.0	-	-

Source: Merced County Assessor's Office, 2014; Madera County Assessor's Office, 2014; Central Valley RWQCB, 2011, 2012
SR = State Route

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